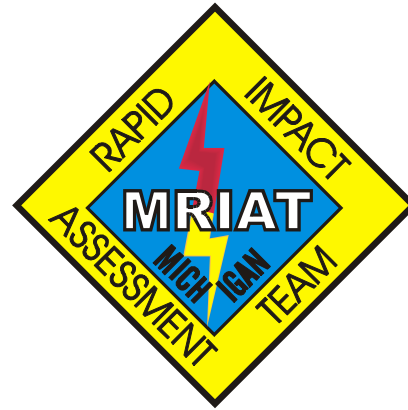


MICHIGAN RAPID IMPACT ASSESSMENT TEAM ASSIGNMENTS AND STANDARD OPERATING PROCEDURES



**BASIC GUIDANCE AND TRAINING HANDBOOK FOR MRIAT MEMBERS
(INCLUDES RELEVANT ELEMENTS OF MSP/EMHSD PUB. 901)**

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Record of Major Changes – December 2009 Edition

Subject	Previous Guidance (1/06)	New Guidance (12/09)	Change	Page References
National Incident Management System	Not specifically addressed	Requirement added	Establishes operational requirement that all MRIAT work activities be conducted under the SEOC Incident Management System (IMS) as defined by the National Incident Management System (NIMS), a federal requirement.	2-4
Primary Assessment Functions	Not specifically addressed	Additional needs assessment functions added	Assessment functions related to the need for state involvement in disaster debris management and disaster logistics management operations assigned to the MSP/EMHSD. Assessment function related to the need for state involvement in disaster donations management operations assigned to the Michigan Department of Human Services.	4
Agency Name Changes	Old agency names used	New agency names used for MDELEG and MDNRE	Per Governor’s Executive Order, the Michigan Department of Labor and Economic Growth (MDLEG) is changed to the Michigan Department of Energy, Labor and Economic Growth (MDELEG); the Michigan Departments of Environmental Quality and Natural Resources are combined to form the Michigan Department of Natural Resources and Environment (MDNRE)	4
Reporting Forms	Described the older forms used prior to E Team	Describes current reporting forms used in E Team	Removed references to data collection forms used prior to E Team.	20
Degree of Damage Categories	Based on FEMA 2005 PDA guidance	Based on FEMA 2009 PDA guidance	Flood depth levels adjusted for minor damage, major damage, and destroyed classifications; “Damage Classification: Rapid Evaluation Matrix” revised to reflect flood level adjustments; text and photo examples for damage classifications re-ordered (in chronological order [0-3], instead of reverse chronological order of [3-0]) in guidance and on forms; “Damage Survey Worksheets” adjusted to reflect changes in flood depth levels and damage classification re-ordering.	37-42
Disaster Debris Estimating Techniques	Based on USACE 2005 guidance	Based on post-Hurricane Katrina USACE guidance	Revised disaster debris estimating formulas and tables based on post-Hurricane Katrina debris management efforts by the USACE; this guidance now matches that found in MSP/EMHSD Pub. 109a – “Local Disaster Debris Management Planning Handbook,” April 2008.	43-45
Hazardous Tree Survey Worksheet	Not specifically addressed	New worksheet added	A “Hazardous Tree Survey Worksheet” has been added to assist in compiling information about damaged or fallen trees that pose an imminent threat to public health / safety and/or property. The worksheet will be particularly useful when surveying damage from strong winds caused by severe storms or tornadoes, or when surveying damage caused by excessive ice and/or snow accumulation.	47
GPS Guidance	Guidance provided	Guidance deleted	Guidance related to the use of hand held GPS devices removed; will be addressed instead in field training.	N/A

PURPOSE

The Michigan Rapid Impact Assessment Team (MRIAT) will be activated to assist the Michigan State Police / Emergency Management and Homeland Security Division (MSP/EMHSD), the Executive Office, affected state agencies, and local governments in assessing the nature, scope, magnitude and extent of damage and impact (effects of the physical damage) of a natural, technological or human-related disaster or emergency. The MRIAT will allow the State to take a more proactive role in determining the damage and impact caused by a disaster or emergency on local communities and state facilities.

TEAM STRUCTURE AND ORGANIZATION

The MRIAT is composed of approximately 40 subject matter experts from 10 Michigan state agencies, plus a liaison from the American Red Cross (see table on page 4). All of these individuals may have responsibilities in a natural, technological, or human-related disaster or emergency, or a terrorist Weapon of Mass Destruction (WMD) attack. The MRIAT's structure and organization has been determined by the MSP/EMHSD based on the assessment needs required for the disaster or emergency situations typically faced by Michigan communities. Not every agency will be activated for each disaster or emergency situation; rather, agencies will be activated on a need to respond basis. The MSP/EMHSD will determine the appropriate agencies for activation based on the needs of each particular situation.

MSP/EMHSD Representatives. The MSP/EMHSD District Coordinator for the affected area (or assigned from an adjacent area) will function as Team Leader. The Team Leader's primary responsibilities include:

- Coordinating team actions;
- Setting survey priorities;
- Assigning tasks to team members;
- Handling logistical concerns;
- Serving as a filtering mechanism for information processing (ensuring that good information is being collected and analyzed);
- Serving as team spokesperson; and
- Serving as a liaison to local officials. (See "Assignments / Responsibilities" for a complete list of responsibilities.)

Other MSP/EMHSD personnel on the MRIAT include:

- The State Public Assistance Officer (to coordinate public damage assessment activities);
- The State Hazard Mitigation Officer (to assess potential mitigation opportunities and measures);
- The State Individual Assistance Officer (to assist in assessing the impact on people); and
- A Computer / Geographic Information System (GIS) Specialist (if circumstances warrant) to coordinate the electronic collection, compilation and reporting of damage and impact estimates.

Local Representatives. Ideally, one or more local officials will accompany the MRIAT to assist in locating the damaged areas and to review and verify the information collected. This local representative is a critical component of the team, as one of the team's basic tenets is to work in partnership with the affected communities.

State Agency Representatives. Depending on the situational circumstances, state agency representatives may be activated to assist in assessing damage and impacts to people, property, essential services and systems, and the environment. Whenever possible, state agency representatives will be assigned to survey work that is consistent with their normal day-to-day responsibilities (e.g., highway engineers will assess road damage, sanitary / environmental engineers will assess damage to water and wastewater utility systems, etc.) Also, every attempt will be made to activate state agency personnel that are actually based or work in the affected area on a regular basis. That way, the representative will be familiar with the local area (and perhaps the local officials), as well as any unique problems specific to the area.

Universal Function. However, circumstances may require that state agency representatives be assigned to conduct surveys of damaged homes and businesses – even though that may not be their primary field of expertise. Home and business damage surveys can be labor intensive and time consuming, and therefore may require a sizeable cadre of state personnel to assist local officials in completing these surveys in a timely manner. Conducting home and business damage surveys is a universal function of all MRIAT members, regardless of their primary field of expertise.

CONCEPT OF OPERATION

The MRIAT will work in partnership with appropriate local officials and will focus on time-sensitive and emergency need requirements. Emphasis will be placed on the impact to people and community facilities and systems. The team will: 1) quickly assess the nature, scope, magnitude, and expected duration of the situation; 2) determine immediate resource needs; 3) determine the extent of damage to and impact on public infrastructure and essential services; and 4) determine the probable extent of the state role in response and recovery operations. Under most circumstances, the team will have a goal of completing its assessment activities within 36-48 hours of arriving at the scene. Speed will be of paramount importance. Assessment information must be timely to be of any real value. The Team Leader will determine survey assignments and working hours for team members based on the needs of the situation.

Incident Management System. The MRIAT will operate under the SEOC Incident Management System (IMS) as prescribed in the Michigan Emergency Management Plan. The SEOC IMS is consistent and compatible with the National Incident Management System (NIMS), per federal requirement. As the chart on the following page illustrates, the SEOC IMS consists of the five standard NIMS sections: Incident Management; Operations; Planning; Logistics; and Finance / Administration. The MRIAT is organized under the SEOC Planning Section, Damage Assessment Unit.

The SEOC IMS can be modified as needed to address situational circumstances and incident size / type. The decision to activate or deactivate the various sections of the IMS structure rests with the Incident Commander. In many cases, the IMS structure may change several times during the different stages of an incident, based on the particular needs at that time. Following are brief descriptions of the roles and responsibilities of the five sections of the SEOC IMS:

Incident Management Section. The Incident Management Section (composed of the Governor, the State Director and/or Deputy State Director of Emergency Management and Homeland Security, and various other representatives from the executive, legislative, and judicial branches of state government) is responsible for developing policy, disseminating information, and coordinating SEOC response and recovery operations.

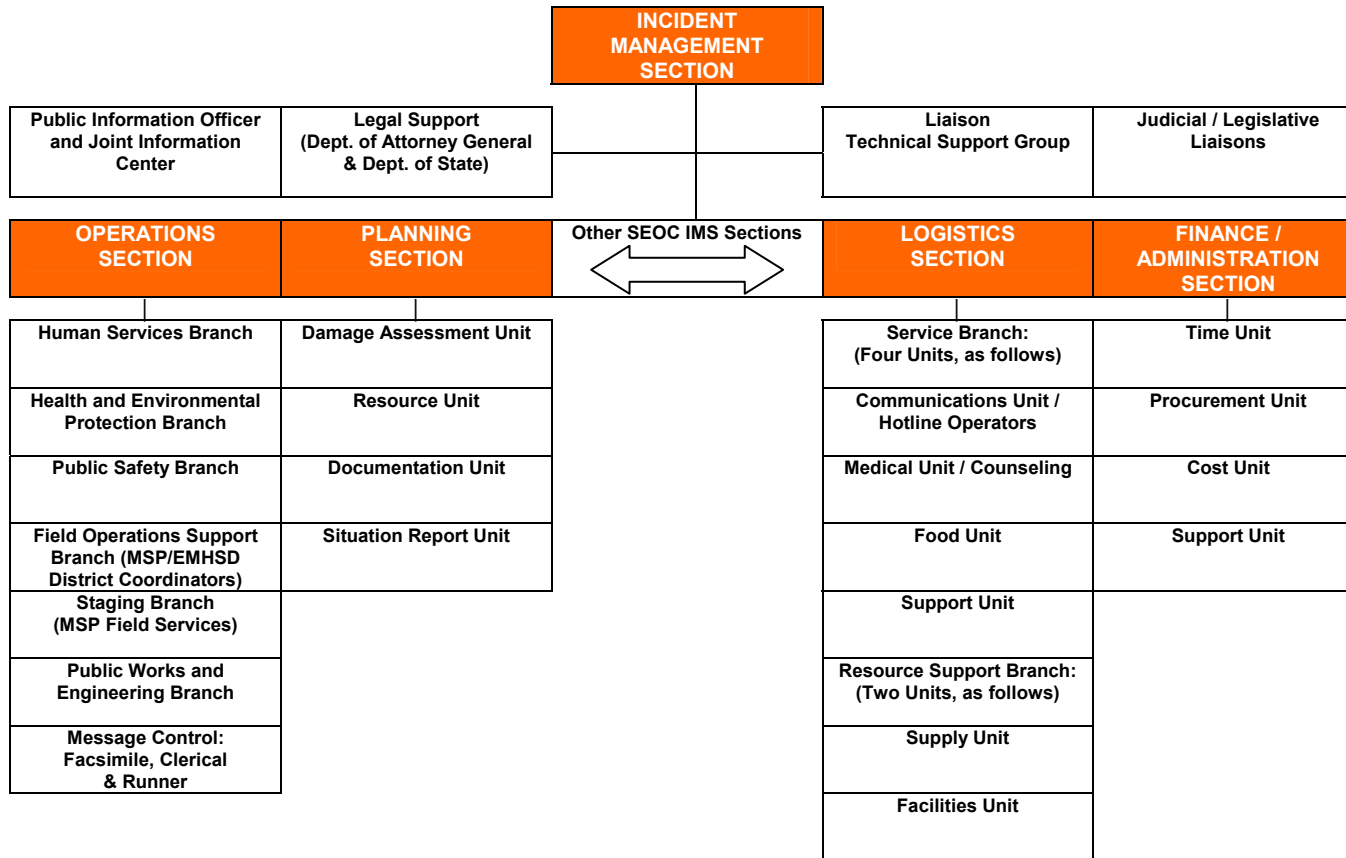
Operations Section. This section is composed of state department directors and/or their representatives (Emergency Management Coordinators – EMCs, a.k.a., Emergency Managers) who are responsible for directing and coordinating the personnel and resources of their department to implement assigned tasks. An Operations Section Chief is responsible for directing and coordinating the actions of the section, and for ensuring that the assigned tasks for each department are completed as required for the situation.

Planning Section. This section is responsible for collecting, compiling, analyzing, synthesizing and reporting on damage assessment information from local jurisdictions, state agencies, federal agencies, private organizations and the media, and for making that information available to the other SEOC sections for their use in response and recovery decision making. The Planning Section is composed of MSP/EMHSD personnel, and where appropriate, representatives from other state agencies – selected according to the needs of the situation.

Logistics Section. This section is responsible for providing for the logistical needs of the SEOC, including food, water, medical needs, information technology, communications, and other necessary resources. The Logistics Section Chief coordinates all of the logistical support activities.

Finance / Administration Section. This section is responsible for identifying, tracking and compiling incident related costs – including personnel costs, equipment and material costs, and contract costs. The Finance / Administration Section also works with the appropriate Incident Management Section staff to arrange for state and/or federal supplemental appropriations to cover the incident costs.

SEOC Incident Management System



Field Coordination Facility. The MRIAT will operate out of the affected local jurisdiction's Emergency Operations Center (EOC) or a State Command Post (generally co-located with the Incident Command Post). If operational needs dictate that a separate field coordination facility be established to support team activities, the Team Leader will arrange for such a facility (preferably within the impacted area). This space could involve anything from an office or conference room in an existing public building, to a hotel / motel room, to a temporary structure brought to the incident scene (i.e., tent or mobile trailer).

Timing of Work. Generally, the team will complete its work prior to the State requesting a Preliminary Damage Assessment (PDA) and federal disaster or emergency declaration from the President. In fact, the team's findings (along with assessment data formally submitted by the affected local jurisdictions) will form the basis for determining if state assistance is required and if the State should request federal assistance through a declaration. See page 5 for a timeline depicting a typical progression of events in a disaster or emergency.

If the situation is of such a catastrophic scale that a federal damage assessment team is activated by FEMA and deployed to Michigan, the MRIAT will be integrated into the federal assessment team structure to prevent needless duplication of survey activities.

ASSUMPTIONS

The following basic assumptions will guide MRIAT operations:

1. Team representatives have the full support and commitment of their respective agencies to participate in all facets of the MRIAT's operations (including pre-event training activities).
2. Participating agencies agree to reimburse their team representatives for all appropriate out-of-pocket expenses incurred while traveling to and from the incident scene and performing approved survey work. Team members will be expected to submit travel / expense vouchers for the purpose of reimbursement unless arrangements can be made to have expenses direct-billed to the agency.
3. Team representatives will perform survey work and other approved activities in accordance with the procedures and guidelines outlined in this document and in MSP/EMHSD Publication 901 ("Damage Assessment Handbook"), the instructions given to them by the Team Leader, and the Memorandum of Understanding signed between their agency and the MSP/EMHSD.
4. MRIAT polices and procedures are compliant with the National Incident Management System (NIMS) and Incident Command System (ICS) protocols. All MRIAT operations will be conducted using NIMS and ICS protocols.
5. The MRIAT will remain intact until all appropriate assessments have been completed or until the Team Leader has officially deactivated the team.
6. If overnight accommodations are required, team representatives will be housed in the affected area unless lack of accommodations or safety concerns dictate otherwise. This allows for longer workdays and cuts down on transportation time and expenses.
7. In situations where a disaster or emergency appears imminent, the MRIAT may be pre-deployed so that assessments can begin as soon as conditions allow.
8. All MRIAT members – regardless of their primary field of expertise – should be able to assist in conducting assessments of damaged homes and businesses. This is a universal assessment function.

MRIAT STRUCTURE

AGENCY	PRIMARY FUNCTION(S)	UNIVERSAL FUNCTION*
Michigan Dept. of State Police / Emergency Management and Homeland Security Division	Team coordination and leadership; public information; logistics; liaison with local jurisdictions; hazard mitigation; disaster debris management needs assessment; disaster logistics management needs assessment; development of final assessment.	Damage to residential and commercial structures.
Michigan Dept. of Agriculture	Damage / impact to agricultural resources and inter-county drains; pesticides hazard assessment.	Damage to residential and commercial structures.
Michigan Dept. of Community Health	Investigation / control of communicable disease and other public health threats; crisis counseling needs assessment; damage / impact to health and medical facilities; technical advice regarding WMD attack impacts (i.e., on public health).	Damage to residential and commercial structures.
Michigan Dept. of Energy, Labor and Economic Growth	Damage / impact to residential and commercial structures; workplace / responder safety issues; energy infrastructure damage.	Damage to residential and commercial structures.
Michigan Dept. of Human Services	Human service needs assessment; disaster donations management needs assessment.	Damage to residential and commercial structures.
Michigan Dept. of Management and Budget	Damage / impact to state facilities, residential and commercial structures.	Damage to residential and commercial structures.
Michigan Dept. of Military and Veterans Affairs	Restoration / repair of public facilities; debris clearance; technical advice regarding WMD attack impacts (i.e., via 51 st WMD Civil Support Team).	Damage to residential and commercial structures.
Michigan Dept. of Natural Resources and Environment	Damage / impact to natural resources (forests and wildlife) and state parks and recreation areas; environmental contamination (hazardous materials, surface water / groundwater, radiological, hazardous disaster debris); flood hazard management; dam safety.	Damage to residential and commercial structures.
Michigan Office of Services to the Aging (Dept. of Comm. Health)	Human service needs assessment (for elderly); damage / impact to home and community-based senior services.	Damage to residential and commercial structures.
Michigan Dept. of Transportation	Damage / impact to transportation facilities and related infrastructure; general engineering expertise.	Damage to residential and commercial structures.
American Red Cross	Liaison will provide information on relevant Red Cross assessment activities and findings.	

*Note: It is expected that all MRIAT members – regardless of their primary field of expertise – will be able to assist (if needed) in conducting surveys of damaged homes and businesses. This is a universal assessment function.

MRIAT: APPROXIMATE SEQUENCE OF TEAM ACTIVITIES

ACTIVITY	STATE ACTIONS / IMPLICATIONS
EMERGENCY OR DISASTER OCCURS	<ul style="list-style-type: none"> Depending on situational circumstances, state agency staff may be actively involved as first responder or in direct contact with first responders.
Initial Notification: E Team Incident Report submitted by local Emergency Manager (EM) or state agency staff	<ul style="list-style-type: none"> E Team Incident Report (and updates, as appropriate) received at SEOC and analyzed by MSP/EMHSD staff. Affected MSP Post may also contribute information to Incident Report (initially with local jurisdiction or via update) per MSP Official Order No. 40.
Joint assessment of situation conducted by local EM and MSP/EMHSD District Coordinator	<ul style="list-style-type: none"> If necessary, immediate state assistance provided to protect public health and safety. <p style="text-align: center;">(GENERALLY COMPLETED BY DAY 1 OF INCIDENT)</p>
IF WARRANTED, MICHIGAN RAPID IMPACT ASSESSMENT TEAM (MRIAT) DEPLOYED TO IMPACTED AREA	<ul style="list-style-type: none"> Pre-deployment briefing conducted by MSP/EMHSD. If possible, team will travel together to impacted area.
JOINT ASSESSMENT CONDUCTED BY MRIAT AND LOCAL OFFICIALS; MRIAT DE-ACTIVATED UPON COMPLETION OF FIELD SURVEYS	<ul style="list-style-type: none"> Team determines impacts on people, public facilities, private structures, essential services, and the local economy. Team findings provided to MSP/EMHSD and local officials for compilation, summarization, and evaluation. <p style="text-align: center;">(GENERALLY COMPLETED BY DAY 2-3 OF INCIDENT)</p>
If warranted, Governor issues declaration under 1976 PA 390; state response / recovery assistance provided	<ul style="list-style-type: none"> Team findings and initial damage assessment reports provide basis for declaration recommendation by MSP/EMHSD. (In widespread and/or severe incidents, Governor's declaration may be issued earlier in the incident response.)
E Team Jurisdiction Situation Report formally submitted by affected local jurisdiction(s); E Team Agency Situation Report formally submitted by involved state agencies	<ul style="list-style-type: none"> Team findings are incorporated into reports as appropriate. <p style="text-align: center;">(GENERALLY COMPLETED BY DAY 3-4 OF INCIDENT)</p>
If warranted, federal / state Preliminary Damage Assessment (PDA) requested through FEMA Region V	<ul style="list-style-type: none"> Team findings and local / state agency Situation Reports provide basis for requesting PDA. Some team members may also represent State in PDA process. (In particularly severe incidents, PDA request may be expedited. Federal "forward leaning" posture may result in earlier arrival of federal incident assessment assets.)
If warranted, federal declaration requested through FEMA Region V	<ul style="list-style-type: none"> Team findings incorporated into PDA report and Governor's letter of request for declaration. <p style="text-align: center;">(GENERALLY COMPLETED BY DAY 5-14 OF INCIDENT)</p> <ul style="list-style-type: none"> (In particularly severe incidents, Governor's request may be expedited per established federal process.)

NOTIFICATION AND ACTIVATION

The MRIAT will be activated by (and at the discretion of) the MSP/EMHSD and/or Executive Office when disasters or emergencies occur that warrant state assistance in assessing damage, impact and resource needs. Generally, MRIAT involvement will be limited to those situations that are 1) "highly problematic" from a technical standpoint, 2) are large-scale or widespread in nature, or 3) are "high profile" due to intense citizen and/or media interest. Most emergencies and smaller disasters do not fall into one of those categories.

Activation of the MRIAT may be initiated at the request of a local jurisdiction (through the Emergency Manager) and/or the recommendation of the MSP/EMHSD District Coordinator, or upon request of the Executive Office. The MSP/EMHSD will evaluate all requests for activation and make the final determination as to whether to activate the MRIAT. If the MRIAT is activated, the MSP/EMHSD District Coordinator will notify the local jurisdiction(s) of the anticipated arrival time of the team and the necessary preparations that must be made.

The MRIAT will normally be activated prior to a Governor's emergency or disaster declaration and mobilization of state assistance (although that may not always be the case). Generally, the MRIAT will complete its work prior to the State requesting a Preliminary Damage Assessment (PDA) and federal disaster or emergency declaration from the President (see timeline on page 5).

State Agency Representatives. State agency representatives will be notified and activated through the designated Emergency Manager for the agency. In the event the Emergency Manager or his/her alternates are not available, activation may be initiated through contact with other appropriate agency management staff. In some circumstances, initial contact may be made directly by MSP/EMHSD Command Staff from the current team roster.

Pre-Deployment Briefing. Once activated, team representatives will receive instructions as to where and when to report for a pre-deployment briefing. At that briefing, team representatives will discuss the team operation, including:

- Travel and logistical concerns
- Survey assignments
- Survey methodology
- Information collection, compilation and reporting
- Public relations in the field
- Working with local officials (and federal, if involved)
- Potential hazards
- Other topics deemed pertinent to the situation

Normally, this briefing will be conducted at the State Emergency Operations Center in Lansing or at another location as designated by the Team Leader and/or the MSP/EMHSD Command Staff. In some situations, the initial briefing will be conducted at or near the incident scene. In rare cases, the briefing will be conducted over the telephone as part of the initial contact, or by facsimile, e-mail or E Team message sent directly to the representative's normal work location. The Team Leader will determine the most expeditious and appropriate method for disseminating pre-deployment information based on situational needs.

LOGISTICS AND FINANCE

Travel Arrangements. Ideally, team representatives will travel together to and from the incident scene; however, that may not always be possible. In most circumstances, travel will be by state-owned motor vehicle, although in some cases it may be necessary to travel by state or commercial aircraft and then pick up a vehicle at the destination airport through a nearby State Police Post or other state facility. The MSP/EMHSD will handle travel arrangements.

Overnight Accommodations. Normally, the MRIAT will not be in the field for more than 48 hours, although in extremely severe or widespread events more time may be required to complete the necessary assessments. The MSP/EMHSD will make any necessary overnight accommodations. If possible, overnight accommodations will be in the affected area unless lack of adequate accommodations and/or safety concerns dictate otherwise. If adequate accommodations cannot be found in the affected area, lodging will be sought in those communities immediately adjacent to the impacted area to cut down on transportation time and expenses. Every attempt will be made to house team members at the same hotel / motel or at adjacent facilities. If possible, arrangements will be made to have the room expenses direct-billed to each respective agency. (Note: In some cases, direct billing may not be possible and individual team representatives will have to pay for their room out-of-pocket and then be reimbursed.) Meals and other miscellaneous expenses will be paid out-of-pocket and later reimbursed in accordance with standard Department of Management and Budget procedures and guidelines.

Field Supplies. The MSP/EMHSD will provide appropriate maps and other basic supplies for conducting assessments. The Team Leader will have the necessary computing equipment and Global Positioning System (GPS) equipment to collect and compile assessment data and produce a report. Microsoft Office software (Word, Access, Excel) will be used. Team representatives must provide their own foul weather gear (winter coats, gloves, boots, umbrellas, rain ponchos, etc.) and any function-specific specialized equipment or supplies needed (e.g., technical manuals, electronic detection equipment, etc.) The MSP/EMHSD will supply each team representative with a lightweight red nylon jacket to wear (if so desired) while in the field. These jackets have "State Damage Assessment Team" printed on the back and help provide identity in the field as well as basic protection against the elements. Hard hats are also available for use.

If the team must conduct assessment operations in a post-WMD attack environment, the MSP/EMHSD will supply team members with appropriate personal protective equipment (PPE) consistent with the conditions to be encountered. Currently, the team is capable of operating in an environment that requires up to Level C protection. (Refer to the "Assessment Protocols for Weapon of Mass Destruction Attacks" section found on pages 11-16 for additional information.)

Weather and Ground Conditions. Team representatives should be prepared to conduct assessments in all types of weather and ground conditions. The only exceptions would be dangerous conditions that could place team representatives in jeopardy, such as lightning, deep or rapidly moving floodwaters, severe cold weather, numerous downed power lines, risk of explosion, etc. The Team Leader will carefully assess the weather and ground conditions before field assessments commence. Team representatives will be expected to follow the recommendations made by the Team Leader with regard to safety while conducting field assessments. The guidance found in the "Assessment Protocols for Weapon of Mass Destruction Attacks" section should be followed when conducting assessment operations in a post-WMD attack environment.

TRAINING AND CERTIFICATION

Team members are expected to attend MRIAT training sessions whenever possible. In addition to the traditional classroom training and field exercises, MRIAT guidance materials are available in electronic (CD) and hardcopy formats for viewing at times that are convenient to team members. Classroom style refresher training (approximately 2-3 hours in length) will be scheduled for delivery as needed and as circumstances allow. Field exercises will be scheduled periodically and may be held in conjunction with or part of a larger disaster drill or exercise. Team members completing each training session will receive a certificate of completion.

Team representatives are encouraged to attend other MSP/EMHSD emergency management training courses (including E Team training) to broaden their understanding of emergency management activities in Michigan. Training is available at numerous locations across the state, and all courses are free (with the exception of some hazardous material training courses which have a modest fee). Course catalogs will be provided at MRIAT training sessions. In addition, copies are available through each agency's Emergency Manager. The course listing can also be viewed and downloaded from the MSP/EMHSD web site (www.michigan.gov/emd).

ASSIGNMENTS AND RESPONSIBILITIES

Following is a list of specific team assignments and a checklist of the major responsibilities that go with each assignment. (Note: The responsibilities listed under each assignment are not all-inclusive; additional responsibilities may have to be addressed based on the situational circumstances. The Team Leader will determine those additional responsibilities and discuss them at the pre-deployment briefing.)

Team Leader (MSP/EMHSD District Coordinator from affected area or assigned from adjacent area)

1. Provide initial contact and liaison with officials from affected local jurisdiction(s). Jointly conduct initial assessment and overview of situation. Ensure that local jurisdiction(s) submit Incident Report(s) via E Team.
2. Jointly determine (with local officials) the need for activating MRIAT to assist local communities in assessing damage and impact caused by disaster or emergency. Communicate request for activation to MSP/EMHSD Command Staff.
3. If decision is made by MSP/EMHSD to activate MRIAT, consult with MSP/EMHSD Command Staff to reach decision on the following basic issues:
 - Location of and topics for pre-deployment briefing
 - Team size and makeup, based on discussions with local officials and perceived situational needs
 - Areas to be surveyed, in priority order
 - Assessment priorities (types of damages / impacts to look for and focus on)
 - Logistical / financial concerns, including travel, lodging, meals, needed supplies, billing and reimbursement, etc.
 - Team assignments and schedules, based on available personnel and situational needs
 - Supplies needed to conduct assessments
 - Special hazards or concerns in affected area
 - Work location in affected area (i.e., local EOC, State Command Post, hotel room, other?)
 - Other topics or issues deemed pertinent to the situation
4. Based on the above discussion with MSP/EMHSD Command Staff, conduct pre-deployment briefing with team representatives.
5. Upon arrival in the affected area, set up temporary quarters in designated work location.
6. Contact local officials to obtain update on conditions and set up times for conducting assessments.
7. Review assignments and work schedules with team representatives and establish (as appropriate) meeting and/or reporting times and locations.
8. If applicable, work with the Computer / GIS Specialist to ensure consistency of data collection and processing procedures.
9. Maintain regular contact with MSP/EMHSD Command Staff.
10. At the end of each day, assemble the team for a debriefing session. Determine problems encountered during the assessment process and work with members to resolve those problems.
11. If appropriate, work with local officials to disseminate information to the media on team activities and preliminary findings. (Note: In those situations where a state "presence" is important, this responsibility should be made a priority.)

12. After the assessments have been completed, work with team representatives and local officials to reconcile data and conclusions. Prepare a final report as quickly as possible and send it via e-mail, facsimile or E Team message to MSP/EMHSD Command Staff, and provide a copy to local officials.
13. Collect any MSP/EMHSD equipment used (e.g., digital cameras, GPS units, maps, nylon jackets, hardhats, calculators, etc.) and communicate replenishment needs to MSP/EMHSD Command Staff.

State Public Assistance Officer (from the MSP/EMHSD)

1. Coordinate the public facility damage assessments (categories A-G of the “Public Assistance Damages” section of the E Team Jurisdiction Situation Report). Ensure that the right type of damage is being assessed, and that it is being assessed properly, using Public Assistance Grant Program (PAGP) guidelines as the general rule.
2. Ensure that potential mitigation measures and opportunities are considered for each damaged or impacted public structure or facility. Communicate findings to the State Hazard Mitigation Officer.
3. Ensure that damaged private nonprofit facilities are assessed (part of category G of the “Public Assistance Damages” section of the E Team Jurisdiction Situation Report).
4. Ensure that damage and impact are examined for each affected public and private nonprofit facility. (Impact is equally as important as the damage numbers and dollar figures.)
5. Ensure that photographs are taken of facilities as they are assessed, showing appropriate aspects of the damage. Video footage is also acceptable.
6. Ensure that costs for emergency measures taken by local communities (category B of the “Public Assistance Damages” section of the E Team Jurisdiction Situation Report) are considered in the assessment process.

State Hazard Mitigation Officer (from the MSP/EMHSD)

1. Work with the State Public Assistance Officer to ensure that potential mitigation measures and opportunities are identified and examined as part of the public / private nonprofit facility assessments.
2. Work with the State Individual Assistance Officer to ensure that individual mitigation measures and opportunities are identified and examined as part of the assessment of damage and impact on people and businesses, with emphasis on widespread, common, or broad-based problems that have affected a large number of households and structures.
3. Carefully examine the public and private damage to find common trends and causative conditions. Determine mitigation measures and approaches that might be applicable to the conditions.
4. As appropriate, take photographs and/or video footage of structures or areas that could potentially be the focus of mitigation efforts.

State Individual Assistance Officer (from the MSP/EMHSD)

1. Work closely with local officials to assess the various impacts on people (the “What Information Can You Provide Regarding Number of Casualties” and “What Damage Information Can You Provide” sections of the E Team Jurisdiction Situation Report). Determine the unmet needs of the population, and possible resources that could be mobilized to meet those needs.
2. Work closely with local officials, the Chamber of Commerce, and area business associations to assess damage and impacts to businesses in the community (the “What Damage Information Can You Provide” section of the E Team Jurisdiction Situation Report). Determine how many people may be unemployed as a result of the disaster or emergency, and what effect this might have on the community in terms of lost income, lost tax base, disruption to community services, etc.
3. As appropriate, take photographs and/or video footage of damaged / impacted homes and businesses for inclusion in the final report and possible Governor’s letter of request for a Presidential declaration.

Computer / Geographic Information System (GIS) Specialist (from the MSP/EMHSD)

1. Coordinate electronic data collection and processing activities, including (where appropriate) geospatial locational data (latitude and longitude coordinates). Ensure consistency of data collection procedures and compatibility of software, report forms, etc.
2. Set up computer station(s) in team’s designated work location.
3. Assist in field data collection, data compilation, E Team connectivity and producing final report.
4. Serve as troubleshooter for any computer / Global Positioning System (GPS) unit problems encountered in the field.

State Agency Representatives

1. Conduct assessments for assigned subject area (e.g., public facilities and infrastructure, private homes and businesses, agriculture, public health, schools, the environment, etc.). Whenever possible, quantify damage and/or impact and collect geospatial coordinates for damaged areas.
2. Determine potential future problems (both long and short-term), identify immediate and long-term resource needs, and suggest possible resources for helping meet those needs.
3. Determine potential state role or involvement in response and recovery activities related to specific subject area.
4. As appropriate, take photographs and/or video footage of damaged / impacted areas and structures for inclusion in the final report and possible Governor’s letter of request for a Presidential major disaster declaration (under the federal Stafford Act).
5. Provide field assessments to Computer / GIS Specialists for compilation and production of final report.
6. Discuss any areas or conditions of immediate concern with the Team Leader to ensure the issue receives priority attention.

FIELD OPERATIONS

The Team Leader will determine an assessment methodology after consultation with local officials, MSP/EMHSD Command Staff, and other involved parties. Several factors will enter into this decision, including the size and nature of the event, the team size, weather and ground conditions, the urgency of the assessment, and the availability of accommodations within the affected area, to name just a few. The following general guidelines will be used to help determine how field assessments will be carried out:

Multi-Jurisdiction Situations. For those events that have impacted multiple jurisdictions, the team will normally be split up into smaller, subject-specific assessment units. The assessment units would then meet back at the designated work location at the end of the day to turn in data collected, compare and review findings, and discuss common problems encountered. The Team Leader may accompany one of the units in the field and assist with assessment activities, may opt to “float” among several units throughout the day, or may stay back in the designated work location and coordinate activities from that point.

Single Jurisdiction Situations. The team will normally assess single jurisdiction events as an intact unit – moving from area to area together with each representative assessing damage and impact within their individual area of expertise. This method has advantages in that each subject matter expert has the opportunity to discuss the damage and impact with other team representatives and get their perspective on the situation. The Team Leader and local representative will help keep the team moving from location to location as quickly as possible, making sure that too much time is not spent at any one site or area.

Communications. The Team Leader will determine the communication methods the team will use. Telephone or radio will be the typical means of communication. The Team Leader will make necessary arrangements with MSP/EMHSD Command Staff and team representatives for appropriate communications equipment. In addition, the local jurisdiction may be able to assist in facilitating communication between team members utilizing local communications assets.

Assessment Protocols for Weapon of Mass Destruction (WMD) Attacks. A prompt and comprehensive assessment at the scene of a WMD attack is necessary to protect the health, safety and welfare of emergency responders and the general public. When planning and conducting assessment operations in a WMD environment, assessment personnel should consider these factors:

- There may be a variety of public safety, health and environmental hazards and risks present at suspected, threatened and actual sites of terrorist attacks.
- The hazards at the scene may not be apparent to emergency responders.
- The hazards may pose significant short- and long-term health, environmental, physical and economic consequences on-site as well as off-site.
- The assessment process will involve the gathering of pertinent information through observation, investigation, and the use and application of technical knowledge and resources.

Role in a WMD Attack. Depending on the situational circumstances, the team could be called upon to provide early assistance in assessing the nature, scope, magnitude, and extent of damage and impact of a WMD attack. While the team does not have the expertise or equipment to identify particular agents that might be used in a WMD attack, it certainly could help determine actual / potential damage and impacts once the appropriate response elements (e.g., biological laboratories, hazardous material teams, regional response teams, etc.) identify the agent involved and the scene is stabilized. (Specialized federal response and support assets are available to assist local and state agencies in identifying the particular type of agent used in a WMD attack. Refer to the WMD Attack Procedures in the Michigan Emergency Management Plan – MSP/EMHSD Publication 101 – for a listing of these federal resources.)

In the event of a WMD terrorist attack where there are mass casualties and/or significant property damage has occurred, the team will conduct assessment operations with the assistance of the technical experts from various state and federal agencies as described above. The team and the state / federal support elements will conduct appropriate sampling and monitoring operations to ensure public (and responder) safety and to address on- and off-site environmental concerns. The WMD attack assessment process will generally consist of these six components:

- Identification of any substance in the air (e.g., toxic, corrosive, asphyxiant) that may be immediately dangerous to the life and health (IDLH) of emergency responders and/or the public.
- Identification of any other hazards in the area that could endanger emergency responders and/or the public (e.g., structural hazards, potential explosives, flammable materials, etc.).
- Potential or actual off-site consequences of the identified hazard(s).
- Environmental characteristics of the site (e.g., geography, topography, meteorology, development patterns, etc.) that may impact response and recovery operations and/or the safety of the public.
- Identification of facilities, infrastructures, critical systems, community groups, essential services, etc. that may be (or have been) affected and the level of damage / impacts.
- Information that may assist in identifying the type of tactics, hazards and risks confronting responders and those involved in recovery operations.

Reporting. Damage assessment information will be reported to the MSP/EMHSD using the E Team Incident Report and/or Jurisdiction Situation Report, as described earlier in this document. However, for security reasons the MSP/EMHSD may require that damage assessment reports for WMD attacks be submitted via the LEIN or other secure means. (The MSP/EMHSD will provide guidance regarding secure submittal of information as needed.)

Self Protection in a WMD Attack. The team would not normally be considered a “first responder” at the scene of a WMD attack and therefore would not enter affected areas until the scene had been stabilized. However, even with a secondary response role it is likely that the team would still have to operate in potentially hazardous conditions which may include dust, dirt, hazardous / contaminated debris, smoke, and possibly the residual effects of the WMD agent employed in the attack. For that reason, it is essential that adequate self protection measures be taken to protect all members of the team while conducting assessment operations.

Basic self protection measures taken at a WMD attack would be similar to those used at any other hazardous material incident and involve time, distance, shielding and decontamination:

- **Time** as a self protection action simply refers to minimizing the amount of time spent in the hazard area. Entries into the hazard area for assessment purposes should be done in a rapid, organized manner to minimize the duration of exposure. Less time spent in the hazard area reduces the chance for injury or illness. It is difficult to suggest a universal time limit for assessment activities at a WMD attack scene because each incident has unique circumstances. However, the Incident (Unified) Command should establish guidelines for duration of assessment operations within the hazard area and those guidelines must be strictly followed by all assessment personnel. Minimizing time in the hazard area also helps preserve criminal evidence.
- As with hazardous material incidents, first responders must maintain a safe **distance** from the hazard area unless they have been specifically authorized to enter the area and have employed appropriate protection measures. The Incident (Unified) Command will provide guidance to assessment teams regarding safe distances from the incident scene. If potentially hazardous conditions still exist at the incident scene at the time of assessment operations, that may require that assessment activities be conducted remotely with the aid of binoculars or other enhanced viewing devices, or they may have to be conducted at a later time when the scene has stabilized.

- Assessment teams must use appropriate **shielding** to protect against the hazards that might be present at the incident scene. The Incident (Unified) Command will determine the appropriate level of shielding that must be employed by assessment personnel based on the hazards present. In general, shielding may consist of buildings and vehicles as well as personal protective equipment (PPE) such as chemical protective clothing.
- Assessment personnel exposed to potentially hazardous substances at the WMD attack scene must employ immediate and effective **decontamination** measures to minimize the effects of the substances and to prevent their spread from the hazard area. Decontamination must be considered and planned for prior to entering the hazard area. The Incident (Unified) Command will establish decontamination procedures for all persons working in the hazard area. Decontamination procedures will be determined based on the substances present at the scene, the duration of exposure and the type of personal protection employed. In general, decontamination will consist of the following steps:
 - Washing with water
 - Removing and properly disposing of contaminated clothing
 - Flushing with water again (if needed)
 - Exposure to some chemical or biological agents may require more extensive decontamination at the scene

WMD Attack Hazards. Terrorist WMD attacks may involve one or more of several types of agents / devices, each creating its own set of unique problems which must be addressed with distinct tactical considerations and response procedures. These include:

- Biological agents
 - Nuclear / radiological devices
 - Incendiary devices
 - Chemical agents
 - Explosive devices
- **Biological agents** are divided into three types – bacteria and rickettsia, viruses, and toxins. Toxins are strong poisons produced by living organisms, while bacteria, rickettsia and viruses are disease causing organisms. Biological agents can be dispersed by aerosol means (through the air), by oral dissemination (through food, water, etc.), or dermal exposure (through direct contact or injection). Although various biological agents cause different symptoms in humans, some of the more common ones include itchy skin, fever, shortness of breath, bloody sputum, headaches, rash, diarrhea, gastric bleeding, lesions, fatigue, cyanosis, chills, brain inflammation, vomiting, paralysis and pulmonary congestion.
- **Nuclear / radiological terrorism** could be carried out in one of three ways. The first is by detonating a device such as an atomic bomb (nuclear fission), although this method is not a likely due to the complexities involved in building such a bomb and the tight security surrounding existing nuclear devices. The second and most likely possibility involves the packing of radiological material around a conventional explosive device. When the device is detonated, the radiological material is dispersed into the air, contaminating everything it comes in contact with. This device is commonly referred to as a “dirty bomb.” The third method requires the detonation of a large explosive device in close proximity to a target containing large quantities of radiological material such as a nuclear power plant or nuclear research facility.
- **Incendiary devices** utilize fire to cause extensive physical damage, injury and loss of life. They may be triggered by either chemical reaction or electronic / mechanical ignition and delivered as a stationary device, hand thrown, or self-propelled. Incendiary devices require an ignition source, a filler material that is combustible, and a container to hold the filler. Many common materials can be used to construct these devices including flares, light bulbs, household chemicals, compressed gas cylinders, electrical devices, gasoline, matches, fireworks, plastic pipe and bottles / cans.

- **Chemical agents** can be used by terrorists to cause significant numbers of injuries and deaths through a variety of means. These materials are classified by the military as nerve agents, blister agents (vesicants), blood agents, choking agents, and irritants (riot control). Although many of these agents cause common symptoms such as difficulty breathing or vomiting, each also attacks the body in a different manner:

- Nerve agents attack the central nervous system and are very toxic in both liquid and vapor states. Death can result within minutes.
 - Blister agents (vesicants) primarily affect the eyes, airway and skin, although absorption of these materials can affect other body systems as well. Victims may indicate a prominent garlic odor.
 - Blood agents (cyanides) can result in seizures, respiratory arrest, and cardiac arrest. These substances have the same effect as asphyxiation, but more sudden.
 - Choking agents cause airway irritation, dyspnea (difficulty breathing), tightness in the chest and pulmonary edema after inhalation of vapors.
 - Irritants are used for riot and crowd control as well as individual incapacitation and cause temporary pain, burning, discomfort on exposed skin and mucous membranes.
- **Explosives** are the most commonly deployed terrorist WMD (involved in 70% of terrorist incidents) and may be used to disperse chemical, biological, incendiary, and nuclear / radiological agents as well as cause widespread physical destruction. The primary effects of explosives include blast pressure, fragmentation and thermal impacts. Common explosive devices include pipe bombs (generally small and providing limited destruction), satchel bombs (which consist of nails, glass, etc. packed along with explosives inside a bag or satchel), and vehicle bombs (large, powerful devices that are detonated remotely or by timer). Other types of homemade or improvised explosive devices may include grenades, land mines, and projectiles. A major concern when responding to a terrorist WMD attack involving explosives is to ensure that no unexploded or secondary devices are in the area. Terrorists often use multiple bombs to target responders when they arrive at the scene.

Protective Equipment Needs. In almost every WMD attack scenario, it is a safe assumption that assessment teams will need some level of personal protective equipment (PPE) in order to conduct assessment field operations. This PPE may range from nothing more than a dust mask and coveralls (Level D protection) up to a basic level of chemical protective clothing with mask and respirator (Level C protection). (Note: Level A and B PPE require specialized training and certification as well as fit testing in order to be properly used. Most assessment operations, however, can be conducted with a minimal level of PPE equivalent to Level C or D protection.) The type and level of PPE required is entirely dependent upon the situational circumstances and conditions at the time the assessment operation is being conducted. The Incident (Unified) Command will determine the type and level of protection required in order to safely conduct field assessments. The Team Leader will communicate that decision to the team members prior to field deployment.

The team has sufficient PPE to outfit the number of personnel that will likely be required to conduct assessment activities in a post-WMD attack scenario. Although it is difficult to determine exact equipment needs because of the myriad scenarios that could occur, at a minimum the team will have basic chemical resistant protective suits (splash suits) or protective coveralls, dust masks, hard hats and rubber gloves and boots for each team member, along with sufficient quantities of duct tape or equivalent for sealing the suits.

Other Equipment Needs. In addition to the basic PPE required to conduct post-attack assessment operations, the team will also have available sufficient quantities of the following items in its equipment cache:

- Plastic bags of various sizes (freezer, garbage, etc.) for securing personal items and clothing of team members, for removal of PPE during the decontamination process, and for protecting cameras and other devices while in the field.
- Disposable cameras to photographically document damage, field operations, and potential criminal evidence.
- Several large bottles of water for drinking and for small-scale decontamination.
- Binoculars (small and inexpensive) to view damaged areas from a distance, if required.
- Disposable clipboards, pens, pencils, notepads, etc. for recording information while in the field.
- Wire flags or plastic flagging tape for marking potential criminal evidence or other significant items / locations.

WMD Training. At a minimum, team members should have attended the “Terrorism Awareness: First Responder” or equivalent course offered by the MSP/EMHSD, or received an expedient version of the same course prior to being deployed into the field. Team members should also have attended the MSP/EMHSD “Damage Assessment Workshop” and/or be very familiar with local and state damage assessment procedures. A highly trained assessment team is much more likely to conduct assessment operations in a safe, efficient and effective manner – highly desirable when working in a post-WMD attack environment. Poorly trained individuals are much more likely to make mistakes in the field or unnecessarily prolong the assessment operation, possibly endangering themselves and others in the process.

Field Operations. The assessment operation will begin at the Incident (Unified) Command Post, staging area or other designated location where incident-specific information and instructions can be given by the Incident Commander or his/her designee (and the Team Leader) and the team can properly suit up in PPE and ready its field survey equipment. In general, the smallest possible team will be used to conduct the field assessments – especially if hazardous conditions exist – and assessments will be conducted in the most expedient manner allowable given incident circumstances.

Depending upon the situational circumstances, field assessment operations will be conducted from one of three incident management “zones.” The “hot zone” includes the immediate incident scene and is the location where the most hazardous substances are likely to be located. Because of the specialized knowledge, training and equipment required to operate in this environment, it is unlikely that assessment activities would be allowed within this hazardous area unless the team is trained and equipped to a very high protection level (Level A or B) – which it currently is not. The “warm zone” is the area immediately adjacent to the “hot zone” and is used as a buffer between the hazardous area and the areas not directly affected (the “cold zone”). The warm zone is the location where safe entry and exit is made from the hot zone, and where decontamination operations occur (see “Decontamination Process” section on the following page). If assessment operations are conducted from the warm zone then team members will have to wear PPE and be decontaminated at the conclusion of the operation. Assessment operations conducted from the cold zone will not require special precautions for personnel or equipment.

For hot or warm zone operations, disposable cameras, binoculars and other hand-held equipment will be placed in protective clear plastic bags (freezer bag or equivalent) and properly sealed for use in the field. This will protect the equipment from contamination but still allow it to be used. (Any equipment not protected in this manner will have to be decontaminated using soap and water – which would ruin many items.) Disposable clipboards, pens / pencils, notepads, etc. that cannot be sealed in plastic must be used unprotected but then will normally be discarded at the end of the assessment operation as part of the decontamination process.

Field survey information can be recorded on the damage survey worksheets (found on pages 41-42), damage maps (page 40), and E Team Incident Report and Jurisdiction Situation Report as described earlier in this guidance document. Photographs of damaged / impacted areas should be taken in accordance with the guidelines prescribed in the “Guidelines for Disaster Photography” section found on pages 49-50.

Evidence Preservation. Team members should take special care when conducting field assessments, making sure that the incident scene is not disturbed any more than is absolutely necessary. It is possible that the team may discover additional criminal evidence that may aid in the identification and capture of the terrorists responsible for the attack. It is also possible that secondary / undetonated explosive devices may be uncovered as team members traverse the incident scene. Remember, even the most ordinary looking item may turn out to be evidence or an explosive device. In all cases, any item thought to be potential criminal evidence or an explosive device should be left alone but flagged / marked and photographed as is for appropriate follow up action by authorized law enforcement officials. **DO NOT ATTEMPT TO TOUCH OR MOVE THE ITEM – EVEN FOR MARKING AND PHOTOGRAPHIC PURPOSES!** When in doubt, leave it alone, mark / photograph it, and immediately notify the Team Leader and appropriate law enforcement officials through the Incident Command Post or other designated location.

Decontamination Process. Once the field assessment operation has been completed, it may be necessary to go through a decontamination process if hazardous substances were present at the locations where field assessments were conducted. This will help minimize the effects of the substances and

prevent their spread from the hazard area. A designated decontamination area will normally be established in proximity to the incident scene to allow for the decontamination of all persons and items that went into the hazard area. The decontamination area is generally located in the area known as the warm zone which is between the hot zone (the contaminated incident scene) and the cold zone (the secure area where no special precautions are required). Assessment operations conducted in the hot or warm zone will require decontamination of persons and equipment; those conducted in the cold zone will not.

The decontamination process is dictated by the agent(s) employed in the attack and the hazardous substances present at the incident scene. Generally, decontamination is accomplished by thoroughly washing down the team member and any unprotected equipment with water, having the team member remove all PPE (with the assistance of another properly outfitted team member) and place it in a plastic bag for proper sealing and disposal. Cameras, binoculars, etc. that were properly sealed in plastic bags can simply be removed and the protective bag discarded along with the PPE. Any paperwork, clipboards, pens / pencils, etc. used to record field observations will have to be discarded as well. The paperwork can be placed in a clean, clear plastic bag, properly sealed, and then photocopied to maintain a permanent record. Once photocopied, the original paperwork and the plastic bag must then be properly discarded. Any vehicles or other large equipment that were involved in the assessment operation must also be decontaminated by properly washing with water.

Post-Operation Debrief. Once the incident response has been completed – including assessment operations – a debriefing session will normally be held shortly thereafter to allow all involved participants to compare notes regarding what transpired, to receive any information that might be required regarding potential medical or health issues, and to bring closure to the incident. Approximately a few days to one week after the post-operation debrief, a follow up response critique is also normally held to evaluate what went wrong and right with the incident response, to more closely examine the “lessons learned,” and to formulate any after-action adjustments that might be required in the areas of training, plans / procedures, equipment, or intra- / inter-agency coordination. As required, the Team Leader (and in some cases the individual team members) will attend these meetings to convey the relevant findings of the team with regard to the assessment operations.

DATA COLLECTION, COMPILATION, ANALYSIS, SYNTHESIS AND REPORTING

Unless the Team Leader indicates otherwise, the following general procedures will be followed pertaining to data collection, compilation, analysis, synthesis and reporting:

Data Collection. Data must be collected in accordance with the basic functional categories outlined on the E Team Jurisdiction Situation Report used by local governments to report detailed damage and impact assessments. (See pages 31-34 of this document, or MSP/EMHSD Pub. 901 – “Damage Assessment Handbook” – for a copy of the Jurisdiction Situation Report.)

Narrative Impact Assessments. Detailed narrative descriptions of the following specific subject areas can be recorded in the “What Additional Information Can You Provide” section of the Jurisdiction Situation Report:

- Unresolved and/or emerging public health / safety threats
- Impacts on essential public services and facilities
- Major road / bridge closures
- Impacts on specific community groups (e.g., the elderly, young children, non-English speaking, the homeless, etc.)
- Cities, townships and villages affected
- Socio-economic impacts
- Other pertinent impacts (e.g., environmental, historical, political, psychological, etc.)

Damage Surveys. Damage to individual homes, businesses, and public facilities must be documented on the damage survey worksheet found on pages 41-42. (Instructions for using the damage survey worksheet can be found on pages 35-39.)

Geospatial Data Collection. Wherever possible, geospatial coordinates (latitude and longitude) should be collected (in addition to the street address) for each damaged structure / facility (or clusters of damaged structures / facilities, as appropriate). This will assist the MSP/EMHSD in mapping the damaged areas using a GIS in the SEOC. For some public facility sites (e.g., drains, bridges, culverts, etc.), it will not be possible to include a street address so the geospatial coordinates will be the only method to accurately locate the damaged sites.

In general, geospatial data should be collected in the following manner:

- The standard datum of GPS latitude / longitude collection is the North American Datum of 1983 (NAD-83) or the World Geodetic System of 1984 (WGS-84) of the U.S. Defense Mapping Agency. Coordinates ideally will be in decimal degrees longitude and latitude with at least 6 decimal places for property locations and include a minus (-) to show west longitude or south latitude. For example: latitude 36.999221 longitude-109.044883. However, in many instances it will not be feasible to collect and report data in this manner. Therefore, it is acceptable to record the coordinates in the standard format of degrees, minutes and seconds. For example: latitude 36°42'36 longitude 085° 81'18. The MSP/EMHSD can convert coordinates in this format to decimal format for database and map production purposes. It is also possible on many GPS units to simply enter the location as a “waypoint” and the coordinates can then be automatically downloaded from the GPS unit to the MSP/EMHSD's GIS for database and map production.
- Geospatial coordinates (latitude and longitude) should be taken from one of the following places, listed in order of preference:
 - ✓ The front door of the structure;
 - ✓ The center of the beginning of the driveway, road, or access way that is used to access the property; or
 - ✓ From the westernmost or easternmost point of the property closest to the road or access way (either the SW, SE, NW or NE corner of the property). This specifically applies to areas / facilities / structures where actual addresses and easily recognizable property divisions may not exist.

Although collection of geospatial data is important to the State's assessment, response and recovery efforts, it is also important to remember that the actual assessment of the damaged facility is the ultimate purpose of the MRIAT's activities. Therefore, keeping geospatial data collection as simple as possible is important to keeping the assessment operations on track and on time. It can be very easy to get wrapped up in the intricacies of the process and ultimately forget the intended purpose of the assessment effort. Geospatial data collection is an important part of the process and helps ensure an accurate geographic portrayal of the damage; however, the actual assessment of the damage should remain the focus of the assessment effort.

Data Compilation, Analysis and Synthesis. Once all damage surveys have been completed, the individual Damage Survey Worksheets will be tallied and the results will be recorded in the pertinent sections of the E Team Jurisdiction Situation Report. For example, the total number of businesses destroyed is recorded in the “What Damage Information Can You Provide” section, the total damage costs for roads and bridges is recorded in the “Public Assistance Damages” section, and so forth.

The impact assessment information recorded in the “What Additional Information Can You Provide” section will be summarized and “cleaned up” as needed.

When compiling data, team representatives should be cognizant of common trends or conditions encountered. For example, if 75% of the impacted homes received roof damage, there may be an immediate need for large quantities of poly film or tarps to keep rainwater or snow out of the homes and prevent further damage. If local suppliers can not provide for all the local needs, state assistance may be needed to supplement local efforts. These types of

situations may not be readily apparent when conducting field assessments; however, when the data is compiled and analyzed, the trends or conditions become obvious.

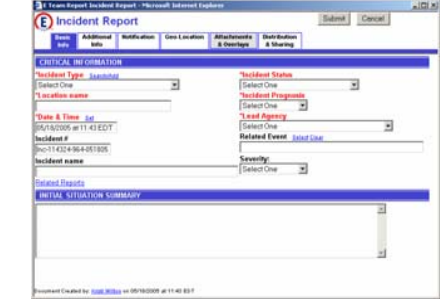
Final Report. The Team Leader will coordinate the development of the team's final report and ensure that it is transmitted as quickly as possible to the MSP/EMHSD Command Staff and affected local officials. The final report will consist of data compiled and summarized on the Damage Survey Worksheets and E Team Jurisdiction Situation Report, along with appropriate supporting documentation such as photographs, video footage, newspaper articles, technical background information, etc. The jurisdiction will submit the "official" final report (which will contain the team's information plus whatever additional information the jurisdiction might want to add) electronically via E Team per the standard procedure outlined in MSP/EMHSD Publication 901. (Note: If E Team is inoperable or otherwise unavailable, alternate submittal methods are specified in MSP/EMHSD Publication 901.)

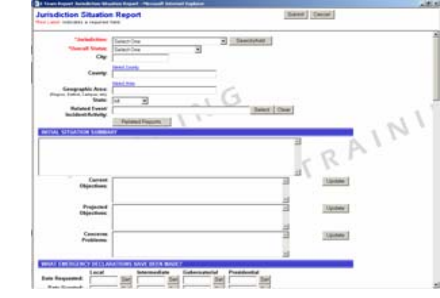
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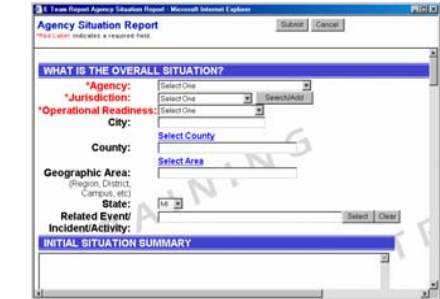
Forms / Guidance

- **Quick Reference: Damage Assessment Reporting**
- **Quick Reference: Summary of Suggested Assessment / Reporting Actions for Local Emergency Management Programs**
- **E Team Incident Report**
- **E Team Jurisdiction Situation Report**
- **Damage Survey Worksheet and Mapping Instructions**
- **Disaster Debris Estimating Techniques**
- **Hazardous Tree Survey Worksheet**
- **Guidelines for Disaster Photography**
- **Field Survey Kits**
- **Damage Assessment Handbook (Pub. 901) Reference**

QUICK REFERENCE PAGE: DAMAGE ASSESSMENT REPORTING

E Team Incident Report	Created By
	<p>Local emergency management programs create Incidents and notify MI SEOC Event / Incident Notification group. MSP Posts (per Official Order No. 40) should work with the local emergency management program to create an Incident, if not already done. If an Incident has been created, the MSP Post can update it with new information to meet the Official Order No. 40 requirements. MSP Posts should NOT create a duplicate Incident within E Team. (If E Team is inoperable or otherwise unavailable, MSP Posts should file a hardcopy Incident Report to meet the Official Order No. 40 requirements.)</p> <p>Remember: Create ONE report and UPDATE it.</p>

E Team Jurisdiction Situation Report	Created By
	<p>Local emergency management programs create Jurisdiction Situation Reports and notify MI SEOC Damage Assessment group. (Note: Local agencies may use the Agency Situation Report to compile and report agency-specific information to the local Emergency Manager. The local Emergency Manager will select relevant items to include in a Jurisdiction Situation Report.)</p> <p>Remember: Create ONE report and UPDATE it.</p>

E Team Agency Situation Report	Created By
	<p>State agencies create Agency Situation Reports and notify MI SEOC Damage Assessment group. (Note: Individual state offices / facilities may update the Agency Situation Report with new information. However, only ONE Agency Situation Report should be established within E Team. DO NOT establish duplicate Agency Situation Reports.)</p> <p>Remember: Create ONE report and UPDATE it.</p>

**QUICK REFERENCE PAGE:
SUMMARY OF SUGGESTED ASSESSMENT / REPORTING ACTIONS
FOR LOCAL EMERGENCY MANAGEMENT PROGRAMS***

Event	State / Federal Assistance Not Required	State / Federal Assistance Required	Suggested Assessment / Reporting Actions	Page Reference (MSP/EMHSD Pub. 901)
Small-scale community emergency (Examples: minor flood or storm damage; minor infrastructure failure; minor hazardous material spill; etc.)	X		<ul style="list-style-type: none"> Collect / compile assessment data Submit Incident Report Declare local State of Emergency? 	5-7; 27-42; 52 4-5; 17-24 5; 25
Large-scale and/or severe community emergency (Examples: major flood or storm damage; major infrastructure failure; major civil disturbance; major hazardous material spill; etc.)		X	<ul style="list-style-type: none"> Collect / compile assessment data Submit Incident Report Declare local State of Emergency Request state / federal assistance Submit detailed Situation Report 	5-7; 27-42; 52 4-5; 17-24 5; 25 8-9; 26 8; 43-51
Terrorist WMD attack (Example: terrorist attack using chemical, biological, radiological, nuclear, or explosives / incendiary agents / devices.)		X	<ul style="list-style-type: none"> Collect / compile assessment data Submit Incident Report Declare local State of Emergency Request state / federal assistance Submit detailed Situation Report 	5-7; 27-42; 52 4-5; 17-24 5; 25 8-9; 26 8; 43-51
Medical incident (Example: disease outbreak / epidemic affecting community.)		X	<ul style="list-style-type: none"> Submit Medical Incident Report in E Team** (Note: The E Team Incident Report can also be used to report Epidemics.) Declare local State of Emergency? Request state / federal assistance† 	E Team User Guide 4-5; 17-24 5; 25 8-9; 26
Planned event (minor) (Example: community-wide festival, rally, or similar event / large gathering.)	X		<ul style="list-style-type: none"> Submit Planned Activity Report in E Team** 	E Team User Guide
Planned event (major) (Examples: major regional or national event – e.g., sports contest, convention, political rally, business meeting, etc.)		X	<ul style="list-style-type: none"> Submit Planned Activity Report in E Team** Request state / federal assistance† 	E Team User Guide 8-9; 26

*Because each incident / situation is unique, these suggested actions should be used as GUIDELINES only. Each community must determine the appropriate assessment response based on the incident / situational circumstances.

**If E Team is inoperable or otherwise unavailable, use the hardcopy Incident Report found in Attachment B to MSP/EMHSD Pub. 901.

†If using E Team, use the E Team Resource Request. If E Team is inoperable or otherwise unavailable, use the hardcopy "Format for Requesting a Governor's Emergency or Disaster Declaration" found in Attachment D to MSP/EMHSD Pub. 901.

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E TEAM INCIDENT REPORT

(Note: Normally filed by jurisdiction prior to team activation; **SHOWN FOR ILLUSTRATIVE PURPOSES ONLY.** The line designators – e.g., Line 1, Line 2, etc. – in each information box are for LEIN and radio / telephone transmittal purposes only.)



Incident Report – Hardcopy (Notes: * = required field; see page 24 for field selections)

CRITICAL INFORMATION

***Incident Type:**
(Line 1)

***Incident Status:**
(Line 2)

***Location Name:**
(Line 3)

***Incident Prognosis:**
(Line 4)

***Date & Time:**
(Line 5)

***Lead Agency:**
(Line 6)

Related Event:
(Line 7)

Severity:
(Line 8)

Contact Info (Name/Title/Phone/E-Mail):
(Line 9)

SITUATION SUMMARY

(Line 10)

INCIDENT REPORT FORM – Field Selections for Critical Information Page (DO NOT SUBMIT THIS PAGE)



Incident Report - Hardcopy

*Incident Type (select only one):

Nuclear Accident	Drug Seizure	Hazardous Material Incident - Radiological	Severe Weather - Hurricane	Terrorist Threat - Chemical
Enemy Attack	Earthquake	Hazardous Material Incident - Unknown	Severe Weather - Lightning	Terrorist Threat - Cyber
Natural Disaster	Epidemic	Insect Infestation	Severe Weather - Other	Terrorist Threat - Other
Technological Disaster	Evacuation	Labor Action - Vital Public Service	Severe Weather - Storm	Terrorist Threat - Radiological
Not Yet Designated	Explosion	Land Slide	Severe Weather - Tornado	Terrorist Threat - Shooting/Hostage
Airplane Crash	Fire	Levee Damage/Break	Severe Weather - Wind	Train Wreck/Accident
Assassination Attempt	Fire - Structure	Missing Person	Sinkhole	Tsunami
Automobile Accident	Fire - Wildland	Mud Slide	Terrorist Incident - Biological	Tunnel Accident
Avalanche	Fire - Storm	Nuclear Facility Accident/Incident	Terrorist Incident - Bombing	Utilities Incident - Communications
Boating/Shipping Accident	Flood	Police Incident	Terrorist Incident - Chemical	Utilities Incident - Electrical System
Bridge Damage/Collapse	Flood - Flash	Protest March/Rally	Terrorist Incident - Cyber	Utilities Incident - Natural Gas Line
Building Collapse	Freeway Damage/Closure	Road Damage/Closure	Terrorist Incident - Other	Utilities Incident - Other
Civil Disturbance	Harassment	Severe Weather - Blizzard/Snow Storm	Terrorist Incident - Radiological	Utilities Incident - Sewer System
Computer System Damage/Failure System	Hazardous Material Incident - Biological	Severe Weather - Drought	Terrorist Incident - Shooting/Hostage	Utilities Incident - Water
Dam Failure/Damage	Hazardous Material Incident - Chemical	Severe Weather - Freeze	Terrorist Threat - Biological	
Downed Power Line	Hazardous Material Incident - Oil/Petroleum	Severe Weather - Hail Storm	Terrorist Threat - Bombing	

*Incident Status (select only one):

Black – Major Assistance Required
Red – Assistance Required
Yellow – Under Control
Green – Resolved
Gray – Unknown
Blue – Closed

*Location Name:

List jurisdiction by name

*Incident Prognosis (select only one):

Red – Worsening
Yellow – Improving
Green – Stable
Gray – Unknown

*Date & Time:

List date & time of incident

*Lead Agency:

List agency or community

Related Event:

List name of related event (if any) that caused this incident

Severity (select only one):

Red – Worsening
Yellow – Improving
Green – Stable
Gray – Unknown

Contact Info:

List name/title/phone #/e-mail address and other contact information as appropriate

Situation Summary:

Provide synopsis of current situation – including chronology of events, damage / impacts incurred, response actions taken, number of persons affected, resources used, etc.

INCIDENT REPORT FORM – Page 2

(As appropriate, submit this page as information becomes available)



Incident Report – Hardcopy (Note: see page 29 for field selections)

PERSONNEL AND INFRASTRUCTURE

of Fatalities:
(Line 11)

Building Damage:
(Line 12)

of Injuries:
(Line 13)

Utilities Damage:
(Line 14)

of Evacuations:
(Line 15)

Road Damage:
(Line 16)

OTHER

Action Plan:
(Line 17)

Weather Information:
(Line 18)

Supporting Agencies:
(Line 19)

Supporting Agencies Contact Information:
(Line 20)

ICP Established (Yes/No)?
(Line 21)

Note: When submitting this via E Team, the fields on the Additional Info Tab are not visible until after the Incident Report has been submitted. The fields can be filled out when the report is updated.

INCIDENT REPORT FORM – Page 3

(As appropriate, submit this page as information becomes available)



Incident Report – Hardcopy (Note: see page 29 for field selections)

WHAT ADDITIONAL INFORMATION CAN YOU PROVIDE?

Law Enforcement

People Involved: (Line 22)
Group Affiliation: (Line 23)
Activity Engaged In: (Line 24)
How Equipped/Armed: (Line 25)
Details: (Line 26)

Medical Health

Field Sites: (Line 27)
Public Water System Affected: (Line 28)
Food Contamination: (Line 29)
Sewage/Solid Waste Problems: (Line 30)
Quarantine Area: (Line 31)
Animal Control Problem: (Line 32)
Infectious Disease: (Line 33)
Mental Health Issues: (Line 34)
Haz Mat Issues: (Line 35)
Evacuation Issues: (Line 36)
Shelter Issues: (Line 37)

Mass Care and Shelter (for each line indicate number and provide comments)

Shelters Open: (Line 38)
Persons Displaced: (Line 39)
Persons In Shelters: (Line 40)
Persons Not Sheltered: (Line 41)
Feeding Sites: (Line 42)
Mobile Feed Sites: (Line 43)
Persons Fed (past 24 hrs.): (Line 44)
Persons Projected Fed (next 24 hrs.): (Line 45)

INCIDENT REPORT FORM – Page 4

(As appropriate, submit this page as information becomes available)



Incident Report – Hardcopy (Note: see page 29 for field selections)

Fire and Rescue

of Fires: (Line 46)

of Acres Burned: (Line 47)

Destroyed

Threatened

Comments

of Homes: (L-R, Lines 48, 49, 50)

of Outbuildings: (L-R, Lines 51, 52, 53)

of Commercial: (L-R, Lines 54, 55, 56)

Hazardous Materials

Type of Threat: (Line 57)

Properties of Threat: (Line 58)

Form of Material: (Line 59)

Specific Agent(s): (Line 60)

Immediate Hazard to People: (Line 61)

Evacuation Recommended: (Line 62)

Decontamination Required: (Line 63)

How Propagating: (Line 64)

Direction/Speed Moving: (Line 65)

Casualties

Civilians

Responders

Fatalities: (L-R, Lines 66, 67)

Injuries: (L-R, Lines 68, 69)

Missing: (L-R, Lines 70, 71)

Totals: (L-R, Lines 72, 73)

Comments: (Line 74)

INCIDENT REPORT FORM – Page 5

(As appropriate, submit this page as information becomes available)



Incident Report – Hardcopy (Note: see page 29 for field selections)

LOCATION

Site Name: (Line 75)	Site Type: (Line 76)
Street Address: (Line 77)	City/State/Zip: (Line 78)
Intersection – Street 1: (Line 79)	Intersection – Street 2: (Line 80)
County: (Line 81)	Geographic Area: (Line 82)
Additional Location Information: (Line 83)	

GEO LOCATION & MAPPING

Latitude: (Line 84)	Longitude: (Line 85)
-------------------------------	--------------------------------

ATTACHMENTS

Supporting Documents Attached: (Line 86)
--

INCIDENT REPORT FORM – Field Selections for Pages 2-5
(DO NOT SUBMIT THIS PAGE)



Incident Report - Hardcopy

Building Damage (select only one):

Heavy
Moderate
Light
None

Utilities Damage (select only one):

Heavy
Moderate
Light
None

Road Damage (select only one):

Heavy
Moderate
Light
None

Action Plan:

Identify applicable pre-defined plan of action being followed (i.e., local EOP, MEMP)

Support Agencies:

List agency or community

ICP Established:

Indicate Yes or No if Incident Command Post has been established

Site Name:

Indicate name of site where incident first occurred

Site Type (select only one):

Airport	Police Station
Corporate Campus	Port
Entertainment Venue	R & D Facility
Executive Home	Railhead
Factory	School
Fire Station	Shopping Center
Headquarters	Warehouse
Office Building	

Geographic Area:

List MSP District in which incident occurred

Additional Location Information:

Provide any other site information that could be useful to responding agencies

Supporting Documents Attached:

Indicate what documents, if any, are attached to this incident report
(i.e., damage map, contact list, photographs, local emergency declaration, request for Governor's declaration)

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E TEAM JURISDICTION SITUATION REPORT

(Note: The MRIAT would assist the local community in developing / gathering this information.)



Jurisdiction Situation Report – Hardcopy (Notes: * = required field; see page 34 for field selections)

***Jurisdiction:**
(Line 1)

***Overall Status:**
(Line 2)

City:
(Line 3)

County:
(Line 4)

Geographic Area:
(Line 5)

State:
(Line 6)

Related Event/Incident/Activity:
(Line 7)

SITUATION SUMMARY

(Line 8)

Current Objectives: (Line 9)

Projected Objectives: (Line 10)

Concerns/Problems: (Line 11)

JURISDICTION SITUATION REPORT FORM – Page 2



Jurisdiction Situation Report – Hardcopy (Note: see page 34 for field selections)

WHAT EMERGENCY DECLARATIONS HAVE BEEN MADE?

Local (Municipal)	Intermediate (County)	Gubernatorial	Presidential
Date Requested: (L-R, Lines 12-15)			
Date Granted: (L-R, Lines 16-19)			

WHAT INFORMATION CAN YOU PROVIDE REGARDING NUMBER OF CASUALTIES

Estimated	Confirmed	Comments
Fatalities: (L-R, Lines 20-22)		
Injuries: (L-R, Lines 23-25)		

WHAT DAMAGE INFORMATION CAN YOU PROVIDE

Destroyed	Major	Minor	Estimated Cost
Residences: (L-R, Lines 26-29)			
Business: (L-R, Lines 30-33)			
Government: (L-R, Lines 34-37)			
			Total Estimated Cost: (Line 38)
Est. % Insured – Residences: (Line 39)			
Est. % Insured – Business: (Line 40)			
Est. % Insured – Government: (Line 41)			

PUBLIC ASSISTANCE (PA) DAMAGES (Note: Categories A & B – exclude normal operating costs)

	Number of Sites	Estimated Loss
CAT A: Debris Removal and Disposal	(L-R, Lines 42, 43)	
CAT B: Emergency Protective Measures	(L-R, Lines 44, 45)	
CAT C: Road and Bridge Systems (non-federal)	(L-R, Lines 46, 47)	
CAT D: Water Control Facilities (levees, dams & channels)	(L-R, Lines 48, 49)	
CAT E: Public Buildings and Equipment	(L-R, Lines 50, 51)	
CAT F: Public Utilities (water and power, etc.)	(L-R, Lines 52, 53)	
CAT G: Park/Recreational/Other:	(L-R, Lines 54, 55)	
TOTALS:	(L-R, Lines 56, 57)	



Jurisdiction Situation Report – Hardcopy (Note: see page 34 for field selections)

WHAT EVACUATION INFORMATION CAN YOU PROVIDE

Number of People Evacuated: (Line 58)

Number of People in Shelters: (Line 59)

Comments: (Line 60)

WHAT ADDITIONAL INFORMATION CAN YOU PROVIDE

Comments: (Line 61)

ATTACHMENTS

Supporting Files/Documents Attached:

JURISDICTION SITUATION REPORT FORM – Field Selections (DO NOT SUBMIT THIS PAGE)



Jurisdiction Situation Report - Hardcopy

***Jurisdiction:**

List jurisdiction by name

***Overall Status (select only one):**

Black – Major Assistance Required
Red – Assistance Required
Yellow – Under Control
Green – Normal Conditions
Gray – Unknown
Blue – Closed

Geographic Area:

List MSP District in which incident occurred

Related Event/Activity:

List name of related event (if any) that caused this incident

What Emergency Declarations Have Been Made?

Local (Municipal) – date/time that declaration was made by local municipality
Intermediate (County) – date/time that declaration was made by county
Gubernatorial – date/time that state declaration was requested and/or granted
Presidential – date/time that federal declaration was requested and/or granted

What Damage Information Can You Provide (estimated cost of damaged residences, businesses, government facilities):

List the estimated costs for repairing/replacing the residences, businesses and government facilities damaged or destroyed in this incident

Public Assistance (PA) Damages:

Indicate the number of sites damaged and estimated loss figures (\$) for each category of public facilities

Category A: Debris Removal and Disposal – include figures for clearing debris from public roads/streets, other public property, and private property (when cleared by government forces to protect public health and safety).

Category B: Emergency Protective Measures – include figures for performing emergency temporary repairs to remove or reduce immediate threats to public health, safety or property, emergency flood protection activities, security/traffic control measures, search and rescue operations, shelter/feeding, etc.

Category C: Road and Bridge Systems (non-federal) – include figures for repairing damage to non-federal highways, roads, streets, bridges, and normal right-of-way elements such as culverts, curbs, gutters, public sidewalks, shoulders, embankments, drainage ditches, signage, lighting, and traffic signals. **(NOTE: THE E TEAM DEFAULT FORMAT ONLY ALLOWS ENTRY OF NON-FEDERAL FIGURES; HOWEVER, FEDERAL AID FIGURES SHOULD ALSO BE INCLUDED IN THE REPORT, AS APPROPRIATE. THE FEDERAL AID FIGURES CAN BE LISTED IN THE “WHAT ADDITIONAL INFORMATION CAN YOU PROVIDE” SECTION, IN THIS MANNER: PUBLIC ASSISTANCE DAMAGES, CATEGORY C – FEDERAL AID ROAD AND BRIDGE SYSTEMS: NUMBER OF SITES = 20; ESTIMATED LOSS = \$8,495,000.)**

Category D: Water Control Facilities – include figures for repairing damage to levees, dams, publicly-owned drainage channels and irrigation works, etc.

Category E: Public Buildings and Equipment – include figures for repairing or replacing damaged public buildings and equipment, including building contents, vehicles, public mass transportation systems (i.e., bus, light rail, ferry), publicly-owned railroads and railroad facilities, publicly-owned ports and port facilities, and publicly-owned airports and airport facilities.

Category F: Public Utilities – include figures for repairing damage to publicly-owned utility systems such as storm sewers, sanitary sewers, sewage treatment plants, public water facilities, water treatment plants, light/power facilities, etc.

Category G: Park/Recreational/Other – include figures for repairing damage to public parks, publicly-owned recreational facilities, and other publicly-owned facilities not covered by any other categories (such as cemeteries and improved/maintained beaches).

What Additional Information Can You Provide:

Describe other incident related impacts, including but not limited to:

- Unresolved and/or emerging public health/safety threats;
- Impacts on essential public services and facilities;
- Major roads/bridge closures;
- Impacts on specific community groups (i.e., the elderly, young children, non-English speaking, the homeless)
- Cities, townships and villages affected;
- Socio-economic impacts;
- Other pertinent impacts (i.e., environmental, historical, political, psychological).

Attachments:

Indicate what documents, if any, are attached to this situation report (i.e., damage map, photographs, declarations/declaration requests)

DAMAGE SURVEY WORKSHEET AND MAPPING INSTRUCTIONS

The damage survey worksheet found on pages 41-42 is provided to assist on-site inspection teams in documenting damage to homes and businesses (private damage) and public facilities (public damage). By using this worksheet, an accurate house-by-house, business-by-business, facility-by-facility, etc. survey can be completed in the shortest time possible. Each street, block, section, etc., (depending on how the surveys are conducted) should be recorded on a separate worksheet. **NOTE: SEPARATE WORKSHEETS SHOULD BE USED FOR PUBLIC AND PRIVATE DAMAGE.**

Mapping Private Damage. Damaged areas should be outlined on one or more maps (ideally one for private damage and one for public damage) and classified according to the predominant level of damage encountered. A common damage classification system is provided on pages 37-39. For example, if an on-site inspection team surveys a four square block area and, upon reviewing their completed worksheets, finds that 75% of the homes and businesses surveyed received major damage (category 2 in the classification system), then the area surveyed should be outlined on the map and assigned a "2". Similarly, if the majority of homes and businesses surveyed received only minor damage (category 1 in the classification system), then a "1" should be assigned to that area, and so on. The number of damaged homes / businesses should be indicated (in parenthesis) in each outlined area. See the sample map on page 40.

Mapping Public Damage. For public facilities, this system works in the same manner. Damaged public facilities are classified on the damage survey worksheet using the same classification system. In addition, a damage cost estimate also should be entered in the "Description of Damage" column on the right side of the worksheet. This damage estimate will only be a "ballpark" number, since there normally isn't time to develop the highly-detailed labor and material estimates necessary for a more accurate cost figure. On the public damage map, a short description of the damage (i.e., 50 ft. section of roadbed collapsed; road impassable) should be entered next to the damaged facility, in addition to the damage classification (i.e., major damage, or "2").

Facilitating Federal / State Assessments. Classifying and mapping the damage in this way makes it easier for Preliminary Damage Assessment (PDA) teams to prioritize damage and complete their necessary damage surveys in the shortest time possible. It also helps ensure that the most serious damage is surveyed first by these teams so that assistance can be targeted where it is needed most. In addition, it also assists federal and state authorities in developing appropriate response and recovery strategies, and in determining the type and amount of assistance required.

Information Submittal. The completed damage survey worksheets, along with the map(s) with damaged areas outlined and classified and any photography taken of the damaged facilities / areas, should be submitted to the Planning Section (in the local EOC) per local procedure. The Planning Section then compiles this information in the appropriate fields on the E Team Jurisdiction Situation Report, attaches one or more damage maps and any applicable photography, and transmits the entire package to the SEOC and the appropriate MSP/EMHSD District Coordinator within the specified three (3) day time period.

Notes Regarding Backup Submittal Methods. If E Team is not available and the backup submittal methods (facsimile, LEIN or e-mail) must be used instead, the following instructions may apply:

- Map / Image Size and Quality. If submitting by facsimile, the damage map(s) and photography must be no larger than 8 ½" X 11" in size and of appropriate resolution to be legible once transmitted. (Keep in mind that the image that comes out of the facsimile machine on the

- Page Numbering. If submitting by facsimile, be sure to number the pages in chronological order (at the top or bottom of the page) in such a manner that the numbers will appear on each transmitted page. This will ensure that the package is arranged in the intended order, and that no pages are missing. The numbers can simply be hand written in and then circled for greater visibility.
- List of Damaged Areas. If submitting information electronically (LEIN or e-mail), a list of damaged areas can be compiled in lieu of the damage map(s). For example, private damage could be described by street, block, section, etc., in any of the following manners:
 - Elm Street from Maple to Oak Streets – major damage to 12 homes, minor damage to 17 homes; OR
 - The area bounded by Elm, Maple, Oak, and Pine Streets – major damage to 12 homes, minor damage to 17 homes; OR
 - The northwest section of the city bounded by Elm Street on the south, M-60 on the west, the Pine River on the north, and US-23 on the east – major damage to 12 homes, minor damage to 17 homes.

Public damage should be described using the exact (official) name of the facility (e.g., Maple Street Elementary School; Ingham County Courthouse; etc.) or, in the case of bridges, roads, sewer lines, etc., the approximate location (e.g., M-60, 1/4 mile south of Centerline Road; the intersection of Davis Road and Burke Highway; the bridge over Maple River on M-25; etc.)

On the hardcopy E Team Jurisdiction Situation Report, this information can be entered in the “Comments” field in the “What Additional Information Can You Provide” section. See page 33.



Damage Survey Considerations: Degree of Damage Categories

The following classification system is consistent with FEMA PDA guidelines and should be used for classifying private and public damage. This information should be recorded on a damage survey worksheet and damage map(s), as per the examples found on pages 40-42. (Note: Damage expressed as a percentage of structure replacement value.)

- 0 AFFECTED:** Structure is habitable / usable and requires mostly cosmetic repairs to return it to pre-disaster condition. Examples: lost shingles or other minor roof problems; broken windows, walls or doors; debris blocking otherwise undamaged roadway; etc.

For flooding, in structures with basements, less than one foot of water in the basement can be considered affected. (If the water damaged the furnace and/or water heater, consideration can be given to classifying the damage as minor damage – see below.) Structures with minor access problems due to flooding can also be considered affected. For mobile homes, if water is under but did not touch the unit, it can be considered affected.

EXAMPLES OF AFFECTED STRUCTURES (0):



- 1 MINOR DAMAGE:** Generally has less than 50% damage to structure, is not currently habitable / useable, but can be repaired within 30 days. Examples of minor damage: a) one wall or a section of roof damaged; b) windows or doors blown in; c) minor problems in road or bridge deck; d) mobile home foundation has shifted or utility connections have been broken.

For flooding, structures with no basement that have 1 foot or less of water covering the first floor can be considered to have minor damage. For structures with basements, 1 foot or more of water or sewer backup in the basement and no structural damage can be considered minor damage. (If the water has been in place for more than one day, extensive foundation damage may have occurred. Consideration can be given to classifying the damage as major damage – see below.) For mobile homes, if water has flooded utilities and/or piers have shifted or washed out, it can be considered minor damage.

EXAMPLES OF STRUCTURES WITH MINOR DAMAGE (1):



- 2 MAJOR DAMAGE:** Structure has sustained structural or significant damage, is not habitable / useable, and requires extensive repairs before it can be used again. Damage involves substantial failures of the structural features affecting strength and safety (e.g., foundation, collapse of any part of the structure, two or more severely cracked, bulging or slanting walls, substantial roof damage, structure obviously not straight or level, collapsed roadbed or bridge deck, etc.). In general, has 50% or more damage to the structure and the damage will likely take more than 30 days to repair.

For flooding, structures with no basement that have in the range of 2 to 4 feet of water covering the first floor can be considered to have major damage. For structures with basements, 1 foot or more of water on the first floor can be considered major damage. (If the water has been in place for more than one day or at a higher level, more extensive damage may have occurred. Consideration can be given to classifying the damage as destroyed – see below.) In addition, water that has caused substantial structural damage or a collapsed basement wall can also be considered major damage. For mobile homes, if water has soaked the bottom board or the home has shifted on its piers, it can be considered major damage.

EXAMPLES OF STRUCTURES WITH MAJOR DAMAGE (2):



3 DESTROYED: Structure is a total loss because the cost of repairs would likely exceed the replacement cost. Any one of the following conditions of a structure may constitute a destroyed classification: a) permanently uninhabitable; b) complete failures to major components (e.g., basement walls / foundation, walls, roof, etc.); c) only foundation remains; d) two or more walls destroyed and roof substantially damaged; e) structure pushed off foundation; f) structure in imminent danger due to impending landslides, mudslides, sinkholes, etc.). What is left will have to be bulldozed off or dismantled for new construction.

For flooding, the depth, velocity, and duration of water in and around the structure will have a significant impact on the degree of damage. Generally, structures that are not be economically repairable (e.g., pushed off foundation) can be considered destroyed. If a structure has 1 or more feet of water on the first floor and it has remained in the structure for more than one day, it is likely that the structure has incurred extensive damage to the walls and foundation and consideration can be given to classifying it as destroyed. If the flood is of shorter duration (rapid rise and fall of the water) consideration can be given to classifying the damage as major damage (see above). Mobile homes that have water above the floor level can be considered destroyed. Mobile homes that have been swept from their foundations by flood waters can be considered destroyed.

EXAMPLES OF DESTROYED STRUCTURES (3):



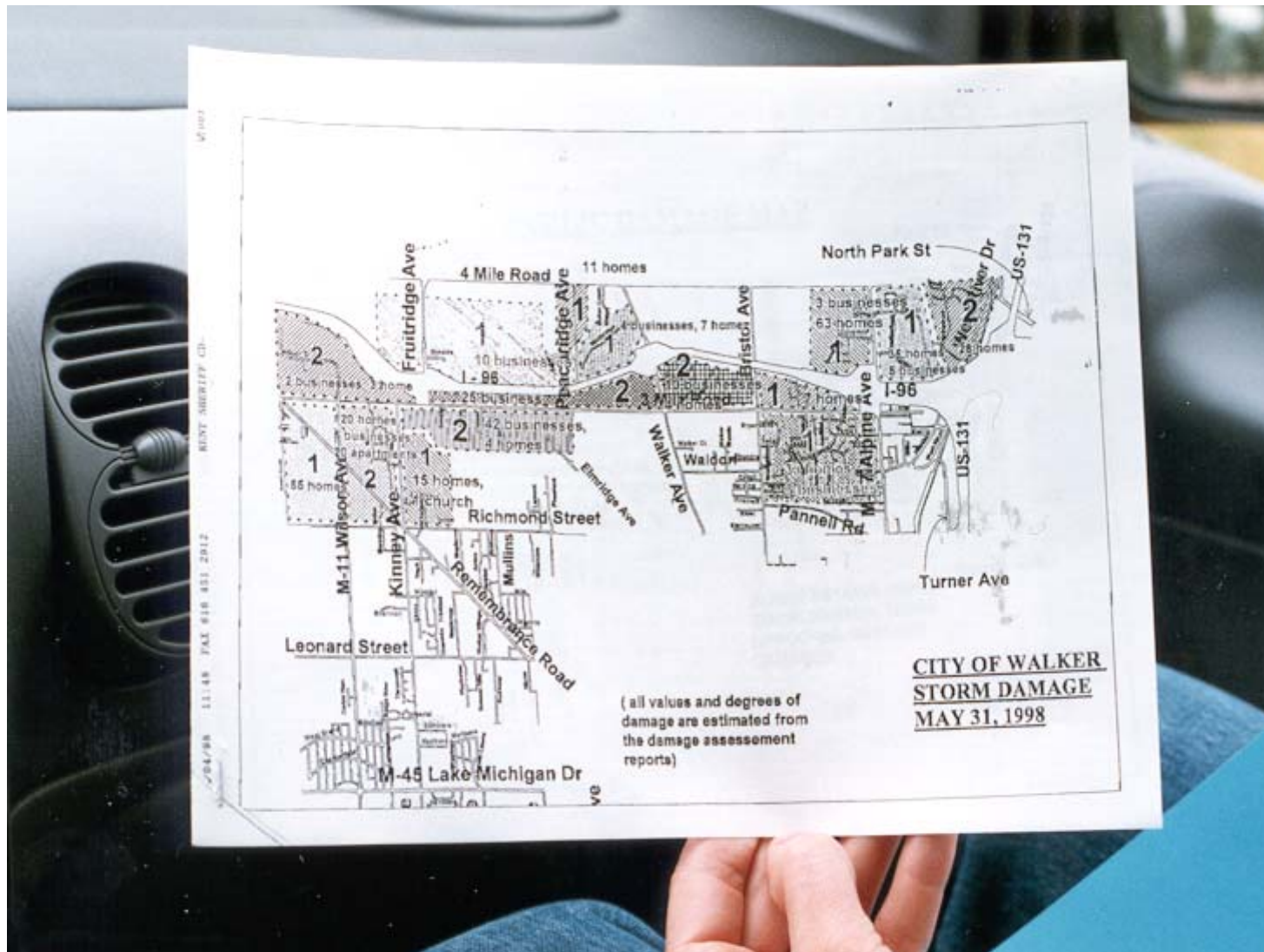
Damage Classification: Rapid Evaluation Matrix

Damage Classification	Currently Habitable / Useable?	Approximate % of Damage/	Flood Depth: Single / Multi-Family Home	Flood Depth: Mobile Home	Flood Duration: 1 Day or Less, Consider This Classification	Flood Duration: >1 Day, Consider This Classification
0 – Affected	Yes; without repairs	Minimal damage; mostly cosmetic	B = <1 ft in basement NB = minor access problems	Minor access problems	0 – Affected	0 – Affected
1 – Minor Damage	No; repairs likely to take less than 30 days	< 50% damaged; windows and doors blown in	B = ≥1 ft in basement NB = <1 ft on first floor	Flooded utilities / piers	1 – Minor Damage	2 – Major Damage
2 – Major Damage	No; repairs likely to take more than 30 days	≥ 50% damaged; involves structural features affecting strength / safety	B = ≥ 1 ft on first floor NB = 2-4 ft on first floor	Bottom board soaked / home shifted on piers	2 – Major Damage	3 – Destroyed
3 – Destroyed	No; permanently uninhabitable	100%; repair costs exceed structure's value	Depth, velocity, duration of flood make structure permanently uninhabitable	Water above floor level / unit swept from foundation	2 – Major Damage	3 – Destroyed

Notes: B = structure with basement / flooding in basement; NB = structure with no basement / flooding on first floor; > = greater than; < = less than; ≤ = less than or equal to; ≥ = greater than or equal to. Follow the chart from left to right, beginning with the left hand column. For non-flood disasters, use the first three columns to evaluate. For flood disasters, use all of the columns to evaluate. Damage is expressed as a percentage of structure replacement value.

Damage Map(s)

Damage information recorded on the damage survey worksheets should be recorded on one or more maps (ideally one for private damage, as shown below, and one for public damage) with the predominant level of damage clearly indicated within each survey area. This area had a mixture of major damage ("2") and minor damage ("1").



Damage Survey Worksheet (showing how private damage is recorded)

Type of Disaster: Flooding*/Severe Storm	County/City: Anytown, MI	Team Conducting Survey: Smith/Jones/Thompson
Survey Date / Street Name or Location: 10/21/03; Maple Street	Damage Type (Public or Private): Private	

Address or General Location	Degree of Damage				Type of Structure	Flood Level in Feet: B=basement F=first floor		Description of Damage (Include cost estimate for public facility damage. Include insurance coverage estimate for damage, if available / applicable. An alternative would be to use a simple alphabetic code for insurance coverage – e.g., N = no insurance; U = under insured; I = fully insured.)	Latitude / Longitude
	0	1	2	3		B	F		
100 Block: 105 Maple Street		X			S	1.5	---	1.5 feet of water in basement only; has flood insurance (100%)	N42°57'19 / W085°07'45
108 Maple Street		X			S	1.5	---	1.5 feet of water in basement only; no flood insurance (0%)	N42°57'24 / W085°08'02
111 Maple Street			X		S	---	2.5	Water below door knob; basement inundated; no flood insurance (0%)	N42°57'19 / W085°07'58
114 Maple Street				X	M	---	1.5	1.5 feet of water above floor level – destroyed; has flood insurance (100%)	N42°57'19 / W085°08'58
200 Block: 207 Maple Street				X	S	---	---	Completely gone – destroyed; has insurance (100%)	N42°57'16 / W085°08'14
212 Maple Street				X	S	---	---	Front walls still standing; everything else gone; has insurance (100%)	N42°57'14 / W085°08'14
217 Maple Street				X	S	---	---	Roof / outside walls gone – destroyed; has insurance (100%)	N42°57'13 / W085°08'18
239 Maple Street	X				S	---	---	Downed tree damaged porch corner only; insurance info not available	N42°57'11 / W085°08'21
*Note: Short duration flooding – less than 8 hours									
TOTALS:	1	2	1	4					

Degree of Damage:

0 Affected (habitable / useable; requires mostly cosmetic repairs)

(Flooding: NB – minor access problems; B – less than 1 foot of water in basement)

1 Minor Damage (<50% damage; not habitable / useable, but can be made so in short time; minor repairs only)

Flooding: NB – 1 ft. or less of water on 1st floor for 1 day or less; B – 1 ft. or more of water in basement for 1 day or less)

2 Major Damage (50% or more damage; not habitable / useable; requires extensive repairs)

(Flooding: NB – 2-4 ft. of water on 1st floor for 1 day or less; B – 1 ft. or more on 1st floor for 1 day or less)

3 Destroyed (100% - not habitable or useable)

(Flooding: 1 ft. or more of water on 1st floor for more than 1 day; for mobile homes, water above the floor level)

Type of Structure:

Private Damage

S Single Family Home

(primary residence)

M Mobile/Manufactured Home

(primary residence)

A Apartment/Rental Unit

(rental residence)

V Vacation Home/Cottage

(secondary residence)

B Business

(includes churches)

Public Damage

P (For public structures, also indicate the type of structure by name)

IMPORTANT NOTE: After the survey is completed, this worksheet should be **RETAINED** locally for reference and follow-up by federal and state officials. Also, be sure to use **SEPARATE WORKSHEETS** for public and private damage to eliminate any possibility of confusion.

Damage Survey Worksheet (showing how public damage is recorded)

Type of Disaster: Flooding*/Severe Storm

County/City: Anytown, MI

Team Conducting Survey: Smith/Jones/Thompson

Survey Date / Street Name or Location: 10/21/03; Northeast Quadrant

Damage Type (Public or Private): Public

Address or General Location	Degree of Damage				Type of Structure	Flood Level in Feet: B=basement F=first floor		Description of Damage (Include cost estimate for public facility damage. Include insurance coverage estimate for damage, if available / applicable. An alternative would be to use a simple alphabetic code for insurance coverage – e.g., N = no insurance; U = under insured; I = fully insured.)	Latitude / Longitude
	0	1	2	3		B	F		
Intersection of M-49 and CR-223		X			Road	---	---	Shoulder washout; minor pavement collapse; \$5,000; N	N42°57'19 / W085°07'45
M-62 bridge at Oak River			X		Bridge	---	---	Partial washout of bridge deck; not usable; \$52,000; N	N42°57'24 / W085°08'02
M-49 culvert at Perkins Drain				X	Culvert	---	---	Complete washout; culvert gone, roadbed collapsed; \$80,000; N	N42°57'19 / W085°07'58
M-49 at mile marker 21	X				Road	---	---	15 downed trees on road; no damage; \$3,000 to remove / dispose of	N42°57'19 / W085°08'58
M-49 bridge at Red Run Drain				X	Bridge	---	---	Bridge completely washed out; total replacement; \$250,000; N	N42°57'16 / W085°08'14
Oak Township Public Works Garage (221 Oak Rd.)				X	Building	---	---	Building completely gone; total replacement; \$900,000; U	N42°57'14 / W085°08'14
Oak Township Water Treatment Facility (600 Oak Rd.)		X			Building	---	---	Roof partially blown off; walls intact; \$50,000; U	N42°57'13 / W085°08'18
*Note: Short duration flooding – less than 8 hours									
TOTALS:	1	2	1	3					

Degree of Damage:

0 Affected (habitable / useable; requires mostly cosmetic repairs)

(Flooding: NB – minor access problems; B – less than 1 foot of water in basement)

1 Minor Damage (<50% damage; not habitable / useable, but can be made so in short time; minor repairs only)

Flooding: NB – 1 ft. or less of water on 1st floor for 1 day or less; B – 1 ft. or more of water in basement for 1 day or less)

2 Major Damage (50% or more damage; not habitable / useable; requires extensive repairs)

(Flooding: NB – 2-4 ft. of water on 1st floor for 1 day or less; B – 1 ft. or more on 1st floor for 1 day or less)

3 Destroyed (100% - not habitable or useable)

(Flooding: 1 ft. or more of water on 1st floor for more than 1 day; for mobile homes, water above the floor level)

Type of Structure:

Private Damage

S Single Family Home

(primary residence)

M Mobile/Manufactured Home

(primary residence)

A Apartment/Rental Unit

(rental residence)

V Vacation Home/Cottage

(secondary residence)

B Business

(includes churches)

Public Damage

P (For public structures, also indicate the type of structure by name)

IMPORTANT NOTE: After the survey is completed, this worksheet should be **RETAINED** locally for reference and follow-up by federal and state officials. Also, be sure to use **SEPARATE WORKSHEETS** for public and private damage to eliminate any possibility of confusion.

DISASTER DEBRIS ESTIMATING TECHNIQUES

Background Note: The following guidelines can be used to aid in estimating the amounts of disaster debris on the ground. By using these measures and some simple mathematical calculations, good ballpark debris figures can be generated in a relatively short amount of time. Determining the amount and types of disaster debris is a necessary first step in setting up a debris removal and disposal operation, and in determining potential costs associated with Category A (Debris Removal and Disposal) work under the federal Public Assistance Grant Program (PAGP), or Section 19 of 1976 PA 390 (MCL 30.419) state funding in the absence of federal PAGP funding. This information can be reported in the "Public Assistance (PA) Damages" section of the E Team Jurisdiction Situation Report (for local jurisdictions) and E Team Agency Situation Report (for state agencies). It can also be reported in the "Situation Summary" section of the E Team Incident Report if early debris estimates are generated.

USACE "Quick" Debris Forecasting Formulas and Tables:

(Sources: FEMA Debris Management Guide, FEMA 325; MSP/EMHSD Publications 109a – "Local Disaster Debris Management Planning Handbook" and 901 – "Damage Assessment Handbook")

Standard Acronyms / Terms: L – Length; W = Width; H = Height; CY = Cubic Yards; T = Tons; SF = Square Feet; C & D = construction and demolition debris (materials from damaged buildings / related); vegetative debris = downed trees / shrubbery (also called "woody debris")

Vegetative Cover Multiplier. The USACE vegetative cover multiplier is a measure of the amount of debris within a subdivision or neighborhood. The following table describes the three vegetative cover categories used by the USACE in debris forecasting:

Vegetation Cover	Description	Multiplier
Light	Includes new home developments where more ground is visible than trees. These areas will have sparse canopy cover.	1.1
Medium	Generally has a uniform pattern of open space and tree canopy cover. This is the most common description for vegetative cover.	1.3
Heavy	Found in mature neighborhoods and woodlots where the ground or houses cannot be seen due to the tree canopy cover.	1.5

Destroyed Single-Family Residence Debris: The following table developed by the USACE provides forecasted debris quantities for totally destroyed single-family, one-story, residential structures in the applicable vegetative cover category:

Typical House (SF)	Vegetative Cover: None	Vegetative Cover: Light (1.1)	Vegetative Cover: Medium (1.3)	Vegetative Cover: Heavy (1.5)
1,000 SF	200 CY	220 CY	260 CY	300 CY
1,200 SF	240 CY	264 CY	312 CY	360 CY
1,400 SF	280 CY	308 CY	364 CY	420 CY
1,600 SF	320 CY	352 CY	416 CY	480 CY
1,800 SF	360 CY	396 CY	468 CY	540 CY
2,000 SF	400 CY	440 CY	520 CY	600 CY
2,200 SF	440 CY	484 CY	572 CY	660 CY
2,400 SF	480 CY	528 CY	624 CY	720 CY
2,600 SF	520 CY	572 CY	676 CY	780 CY

Mobile Home Debris: The typical mobile home generates more debris by volume than a single-family "stick built" home. Historically, the USACE has found the volume of debris from mobile homes to be 290 CY of debris for a single-wide unit and 415 CY of debris for a double-wide unit.

Personal Property Debris – Floods: The amount of personal property within an average flooded single-family home has been found to be 25-30 CY for homes without a basement and 45-50 CY for home with a basement.

Damaged Single-Family Residence Debris: The USACE debris forecast table on the previous page only provides figures for totally destroyed, single-family, one-story, residential structures in the applicable vegetative cover category. Adjustments must be made for structures that incur major damage or minor damage based on Michigan's damage assessment "Degree of Damage Categories" found in Attachment E of MSP/EMHSD Publication 901 – "Damage Assessment Handbook." The MSP/EMHSD has modified the USACE table to provide figures for structures with major and minor damage, based on generalized percentage of damage estimates for each level of damage. For **major damage** (which indicates 50 percent or more and up to 99 percent of the structure is damaged), the debris forecast figure is set at **65 percent** of the USACE figure for each residential structure size. For **minor damage** (which indicates less than 50 percent of the structure is damaged), the debris forecast figure is set at **25 percent** of the USACE figure for each residential structure size. These modified figures are presented in the following table:

Typical House (SF)	Vegetative Cover: None	Vegetative Cover: Light (1.1)	Vegetative Cover: Medium (1.3)	Vegetative Cover: Heavy (1.5)
1,000 SF	Major Damage: 130 CY Minor Damage: 50 CY	Major Damage: 143 CY Minor Damage: 55 CY	Major Damage: 169 CY Minor Damage: 65 CY	Major Damage: 195 CY Minor Damage: 75 CY
1,200 SF	Major Damage: 156 CY Minor Damage: 60 CY	Major Damage: 172 CY Minor Damage: 66 CY	Major Damage: 203 CY Minor Damage: 78 CY	Major Damage: 234 CY Minor Damage: 90 CY
1,400 SF	Major Damage: 182 CY Minor Damage: 70 CY	Major Damage: 200 CY Minor Damage: 77 CY	Major Damage: 237 CY Minor Damage: 91 CY	Major Damage: 273 CY Minor Damage: 105 CY
1,600 SF	Major Damage: 208 CY Minor Damage: 80 CY	Major Damage: 229 CY Minor Damage: 88 CY	Major Damage: 270 CY Minor Damage: 104 CY	Major Damage: 312 CY Minor Damage: 120 CY
1,800 SF	Major Damage: 234 CY Minor Damage: 90 CY	Major Damage: 257 CY Minor Damage: 99 CY	Major Damage: 304 CY Minor Damage: 117 CY	Major Damage: 351 CY Minor Damage: 135 CY
2,000 SF	Major Damage: 260 CY Minor Damage: 100 CY	Major Damage: 286 CY Minor Damage: 110 CY	Major Damage: 338 CY Minor Damage: 130 CY	Major Damage: 390 CY Minor Damage: 150 CY
2,200 SF	Major Damage: 286 CY Minor Damage: 110 CY	Major Damage: 315 CY Minor Damage: 121 CY	Major Damage: 372 CY Minor Damage: 143 CY	Major Damage: 429 CY Minor Damage: 165 CY
2,400 SF	Major Damage: 312 CY Minor Damage: 120 CY	Major Damage: 343 CY Minor Damage: 132 CY	Major Damage: 406 CY Minor Damage: 156 CY	Major Damage: 468 CY Minor Damage: 180 CY
2,600 SF	Major Damage: 338 CY Minor Damage: 130 CY	Major Damage: 372 CY Minor Damage: 143 CY	Major Damage: 439 CY Minor Damage: 169 CY	Major Damage: 507 CY Minor Damage: 195 CY

Other Useful Quick Reference Techniques: The following formulas and tables were developed by the USACE and are based on extensive field observations and calculations in catastrophic hurricanes and other storm events.

One story building: $L' \times W' \times H' / 27 = (\#) \text{ Cubic Yards} \times .33 \text{ (compaction factor)} = (\#) \text{ Cubic Yards}$
 (For example: the formula for a building that is 100' long x 50' wide x 10' high is.... $100 \times 50 \times 10 / 27 = 1,852 \text{ CY} \times .33 = 611 \text{ CY}$)

Debris pile: $L' \times W' \times H' / 27 = (\#) \text{ Cubic Yards}$
 (For example: the formula for a debris pile that is 50' long x 75' wide x 4' high is.... $50 \times 75 \times 4 / 27 = 556 \text{ CY}$)

Quick Reference Table – Debris Piles:

Length (Ft.)	Width (Ft.)	Height (Ft.)	Volume (CY)	Tons (T) – C & D Debris	Tons (T) – Woody Debris	Approximate Size Reference
10	10	4	15	7.5	3.75	Small above ground pool
20	10	4	30	15	7.5	Medium above ground pool
30	10	4	45	22.5	11.25	Medium above ground pool
40	10	4	60	30	15	Large above ground pool
50	10	4	75	37.5	18.75	Large above ground pool

Quick Reference Table – Other:

Type of Debris	Volume (CY)	Tons (T)	Approximate Size Reference
Trees (15 @ 8" diameter)	40	10	8" diameter is roughly the size of a football at its widest point in the middle
One acre of mixed debris, 3.33 yards high	16,117	4029.25	Football field without the end zones, piled as high as a basketball rim

Volume to Weight Conversion Table:

Type of Debris	Tons (T)	Cubic Yards (CY)
Vegetative Debris (mixed)	CY / 4	T x 4
Softwood Vegetation	CY / 6	T x 6
Construction and Demolition (C & D)	CY / 2	T x 2

Debris Composition: Although there is no standard composition data that can be applied to all hazard events, the USACE has developed general guidelines based on its years of experience in being involved in disaster debris management for hurricanes and other severe storms. As a general rule of thumb, most storm generated debris will be **30 percent clean woody (vegetative) debris and 70 percent mixed construction and demolition (C & D) debris**, in total. However, land use, land cover, and existing infrastructure (types of buildings) must be considered, as they will influence these estimates. Other events will generate different debris composition patterns. For example, a terrorist bombing attack on a particular building would likely result in a debris composition that is much closer to 95-100 percent mixed C & D debris. For a wildland fire, the debris composition might be closer to 85-90 percent charred woody (vegetative) debris – depending on the level of development in the urban wildland interface area. For floods, the debris composition will be primarily mixed C and D (perhaps 85-90 percent), with the remainder being woody (vegetative) debris.

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HAZARDOUS TREE SURVEY WORKSHEET

Background Note: The following worksheet can be used to compile information about damaged or fallen trees that pose an imminent threat to public health / safety and/or property. The worksheet will be particularly useful when surveying damage from strong winds caused by severe storms or tornadoes, or when surveying damage caused by excessive ice and/or snow accumulation.

Survey Conducted By: _____

Date / Time of Survey: _____

Street Surveyed: _____

Address or General Location	Tree / Major Branches in Roadway or Public Alley	Tree / Major Branches Blocking Sidewalk	Tree Leaning over Roadway, Sidewalk, or Public Alley	Tree Leaning on Utility Lines	Tree Leaning on Home, Garage, or Other Structure	Hazardous Stump Present?	Approximate Tree Diameter < 12" 12-24" > 24"	Description of Hazardous Condition
Sample: 100 Oak		X				X	> 24"	Stump has sharp edges exposed.
TOTALS:								

INSTRUCTIONS:

- Use separate worksheet for each STREET.
- Check the appropriate condition that you observe. Some situations may require more than one checkmark (e.g., tree blocking both roadway and sidewalk).
- The tan shaded columns are for DOWNED trees / branches. The blue shaded columns are for LEANING trees. The pink shaded column is for HAZARDOUS STUMPS. The gray shaded column is for the TREE DIAMETER. The green shaded column is for a DESCRIPTION of the hazardous condition. The yellow shaded row is for the column totals for each hazard condition.
- Estimate the tree diameter. This is simply to separate out the largest, most potentially problematic tree hazard locations.
- Provide a description of the hazardous condition as appropriate. If structural damage is apparent, note that in the description. Leave blank if no explanation is required.
- If a street address is not readily apparent, use a general description instead (e.g., middle of 300 block of Maple Street).

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GUIDELINES FOR DISASTER PHOTOGRAPHY

Taking photographs and/or video footage of incident scenes is a critically important part of the damage assessment process, yet it is a skill that is often overlooked in damage assessment training. As a result, many incident scene images do not adequately identify the site or portray the nature and extent of the physical damage. These guidelines are meant to help minimize sub-standard disaster photography by providing a simple process to follow when shooting photographs and/or video footage in the field.

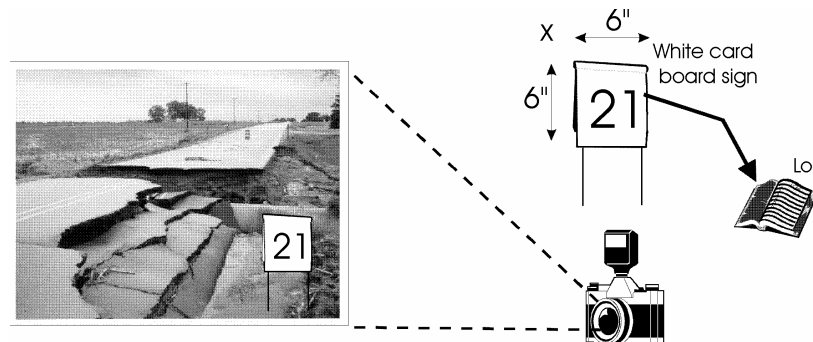
STEP 1: SITE IDENTIFICATION

Proper identification of the site being shot is the first step in the process. Even the best image is worthless if the person reviewing the photograph or video cannot determine where the image was taken. In most instances, the person that actually took the photo or shot the video footage in the field is not the person that ultimately ends up reviewing the images at a later time. In addition, in many disaster situations, it is not uncommon for dozens of sites to be photographed or video recorded, greatly increasing the likelihood that the person shooting the images may not remember where each and every image was taken. Therefore, there is a definite need to establish the identification of the site when it is actually being recorded in the field.

For **VIDEO IMAGES**, the person shooting the scene should verbally identify the name and general location of the site, as well as the date and time that the video is being shot. This should be done for every site being shot. That way, any chance for misinterpretation of the site location is eliminated. (Note: It is also important to remember to keep the camcorder as still as possible when shooting the footage, to avoid the “ocean motion” syndrome that is prevalent in many amateur videos. Unnecessary and excessive movement of the camcorder greatly detracts from the video images. In addition, unnecessary background conversation and noises should be kept to a minimum to provide for the best possible audio quality. Lastly, as a rule of thumb, you should not focus on a particular site image for more than 15 seconds. For example, you may want to show the “context” image for 15 seconds, the “curbside” image for 15 seconds, and the “close-up” image for 15 seconds. Focusing any longer on a site image will make the footage monotonous and unnecessarily long.)

For **PHOTOGRAPHIC IMAGES**, the photographer should assign a number to each site, and record that number and site location in a notebook. For example: **Site 1:** Smith Street Bridge, over the Green River; **Site 2:** Maple Drain culvert under River Road; **Site 3:** Oak Street Senior Center, Pine City; etc.

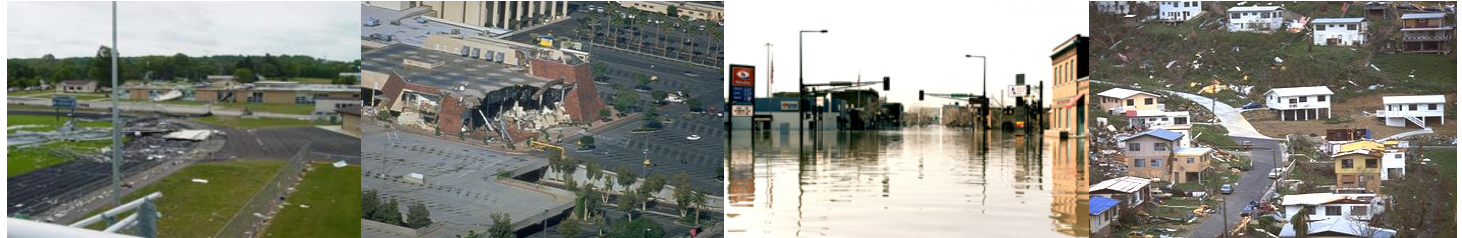
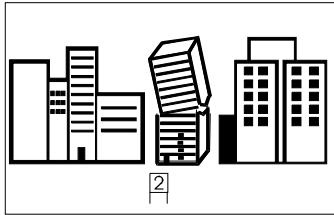
A small cardboard sign (approximately 6" X 6" in size), attached to a wire or wood stake, with the site number clearly marked in black permanent marker, should be placed in the ground at the edge of the site so that it is visible within the camera image frame. This sign will clearly identify the site in the photograph. The sign should be placed in such a manner that it will be in reasonable focus in the final photograph. Each site should be numbered chronologically in this manner, not each image. In other words, all images at site XYZ should be labeled with the number 1, all images at site PDQ should be labeled with the number 2, and so on. Numbering should be continuous, rather than starting over again at number 1 for each roll of film shot.



Each disaster site should be shot from a minimum of 3 different positions to ensure proper image documentation:

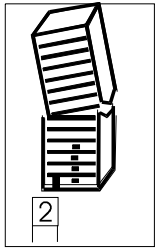
STEP 2: CONTEXT IMAGE

The context image will show the damaged site in relationship to other surrounding structures and land uses. In other words, this image would be shot from a distance such that the site in question, plus the immediate surrounding properties, can be easily viewed within the frame. Such an image would provide the “big picture” of where the site sits in relationship to everything around it. For example:



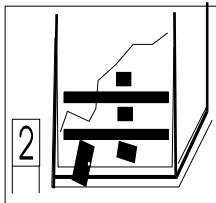
STEP 3: CURBSIDE IMAGE

The curbside image will show the damaged site as it would appear if you were standing in front of it in the street. The site should fill the image frame from edge to edge. For some sites, it may be necessary to stand a little further back than curbside to obtain the proper edge to edge image, but the principle remains the same. This image should contain only the site, and not the surrounding properties. This image will provide a mid-range view of the damage at the site. For example:



STEP 4: CLOSE-UP IMAGE

The close-up image will show the damaged site, or portion of the site, as it would appear if you were standing directly in front of it, approximately 5' - 15' away. This image would be particularly useful in highlighting specific details of the damage, such as focusing on a damaged doorway to a building or a hole in a roadway. In some cases, more than one close-up image will be necessary to adequately portray the damage. For example:



FIELD SURVEY KITS

Field survey kits will be provided to team representatives prior to being dispatched to conduct assessments. Field survey kits will consist of the following items:

- _____ Map(s) of the affected area(s), appropriate type, scale and clarity for conducting assessments
(Note: If necessary, maps can be obtained directly from the affected local jurisdictions.)
- _____ Laptop computer (if information will be collected and compiled electronically in the field)
- _____ Basic recording tools (markers, pens, pencils, rulers, clipboard, etc.)
- _____ Global Positioning System (GPS) units, set up for the disaster area (if geospatial data will be collected)
- _____ Calculator
- _____ Tape measure or small measuring wheel, as necessary and appropriate
- _____ Damage survey worksheets
- _____ Basic communication tools (cellular phone, radio, pager, etc.), as necessary and appropriate
- _____ Copy of MRIAT Assignments and Standard Operating Procedures
- _____ Copy of MSP/EMHSD Publication 901 – “Damage Assessment Handbook”
- _____ Necessary telephone lists / directories
- _____ Badge, ID card, or other appropriate form of personal identification
- _____ Nylon jacket for field identification and protection from the elements, as necessary and appropriate
- _____ Camera (conventional or digital) and film / computer disks and/or video camera and video tapes
(Note: Not every kit will have these items. Some situations may only require one camera and/or video camera, which will be assigned to the Team Leader. Extra batteries will be included in the kit.)
- _____ Hard hat (if conducting assessments in potentially hazardous areas)
- _____ Bug spray / sun screen (warm weather only)
- _____ Flashlight (as necessary and appropriate for dark areas and/or night time field surveys)
- _____ Small first aid kit
- _____ A method of “tagging” sites that have been surveyed (e.g., plastic flagging tape, temporary pavement paint, colored Jell-O, etc.), as necessary and appropriate
- _____ Carrying bag or plastic box for the above items

Note: Personal protective equipment (PPE) will be provided if the team is required to conduct operations in a post-WMD attack environment or other hazardous conditions. Refer to the “Assessment Protocols for Weapons of Mass Destruction Attacks” section for more details on PPE.

“DAMAGE ASSESSMENT HANDBOOK” – MSP/EMHSD PUBLICATION 901

(See December 2009 edition for additional background information on Michigan’s damage assessment system and the conduct of field assessments.)